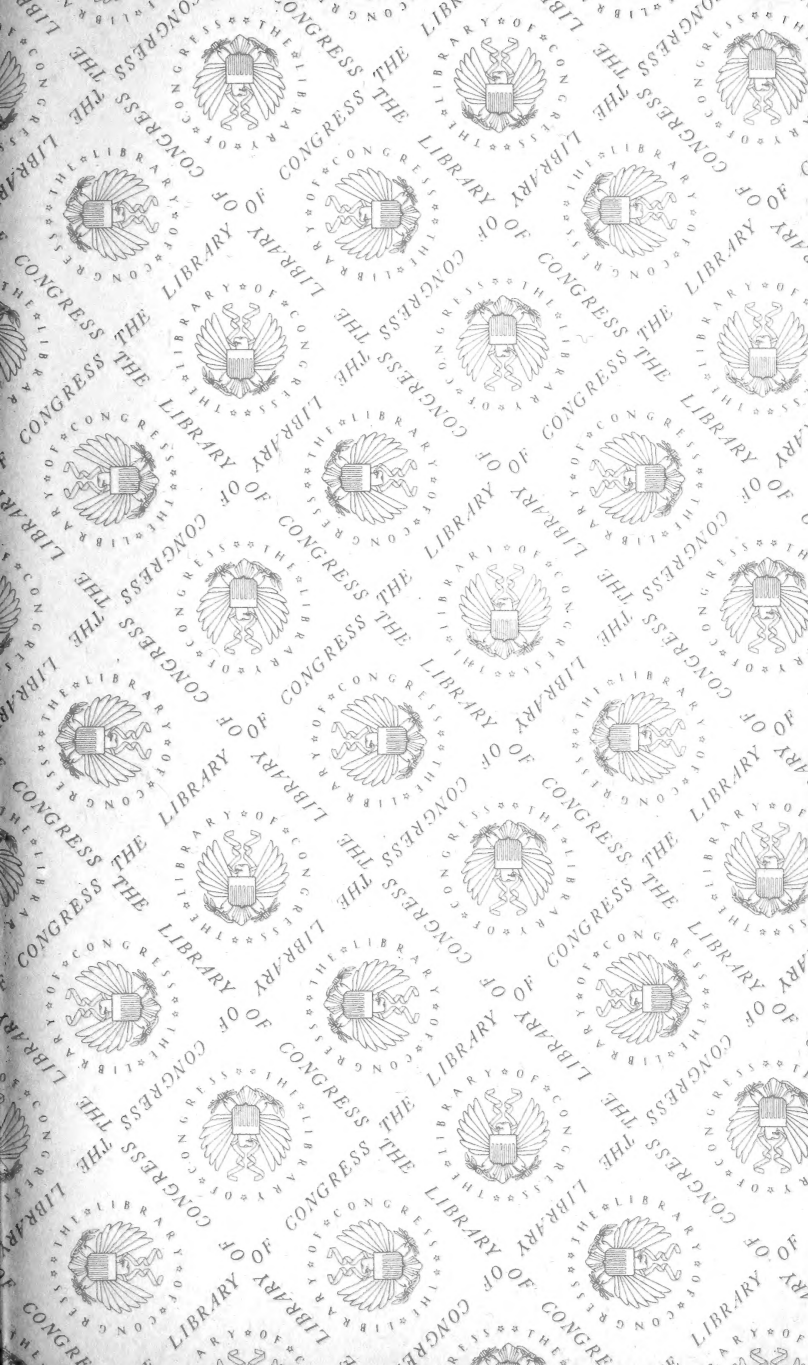


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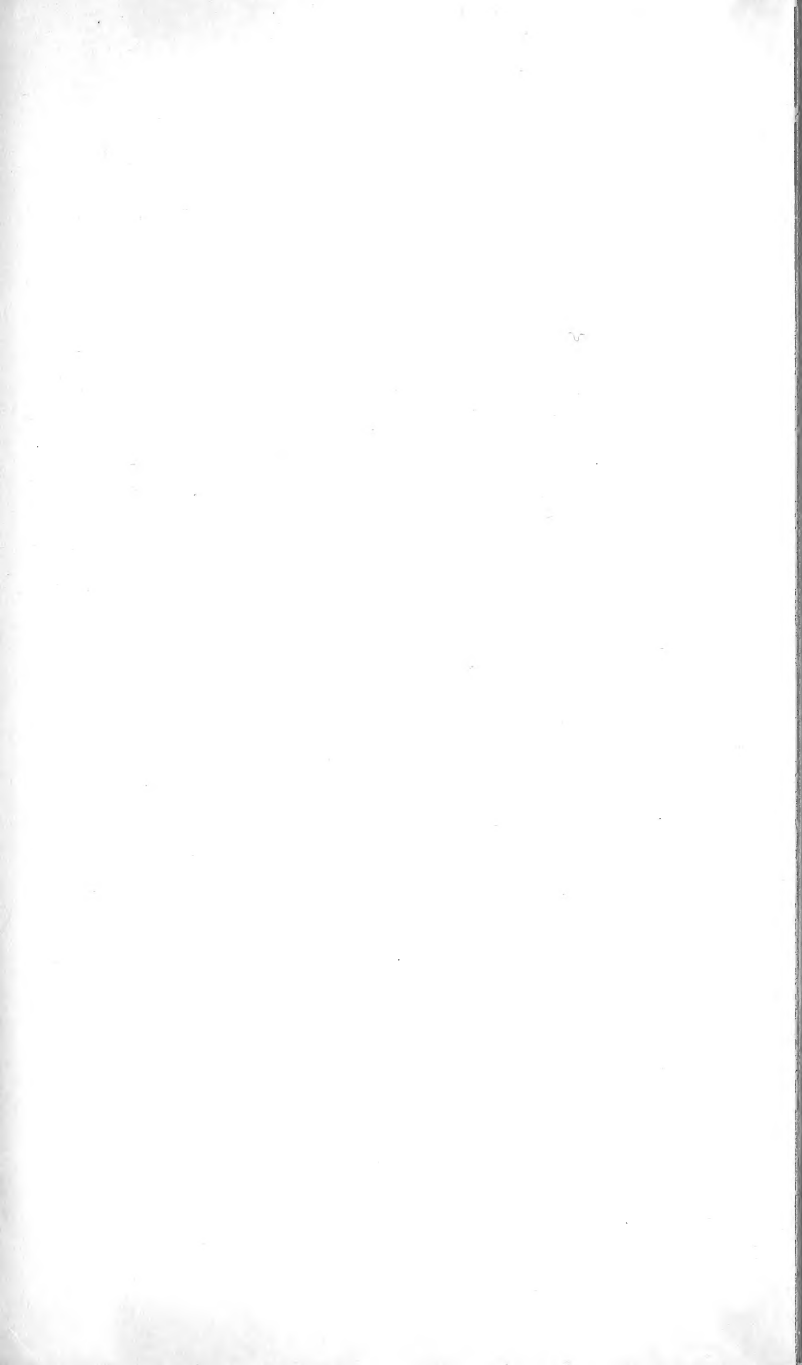
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JOURNAL
OF A RECENT
VISIT TO THE VINEYARDS
OF
SPAIN AND FRANCE:
FORMING A GUIDE TO THE PROFITABLE
CULTURE OF THE VINE
IN NEW SOUTH WALES;
AND TO THE MANUFACTURE OF THE VARIOUS
WINES OF AUSTRALIA AND NEW ZEALAND
TO RIVAL THOSE OF
FRANCE, SPAIN, AND PORTUGAL:

ALSO,
DIRECTIONS FOR THE SUCCESSFUL CULTURE OF THE OLIVE,
WITH USEFUL REMARKS ON THE PREPARATION OF
RAISINS, FIGS, ALMONDS, AND OTHER DRIED FRUITS, WITH AN ESTIMATE
OF THEIR PROFITS AS ARTICLES OF MERCHANDISE:
FORMING A GUIDE TO THE AUSTRALIAN FARMER, ETC.

By JAMES BUSBY, Esq.
OF NEW SOUTH WALES.

THIRD EDITION.

LONDON:
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P R E F A C E.

THE writer of the following pages had long considered that few things could be of more advantage to the settlers of New South Wales, than a knowledge of the agriculture and rural economy of those European countries, whose climates are most analogous to theirs.

He accordingly embraced the opportunity, afforded by his late visit to Europe, to proceed to the south of Spain, and through various parts of France, in the hope that his observations might be useful to the Colonists. His attention was, in particular, directed to the culture of the vine, and the management of its products—a subject which, as most of our readers are aware, was not altogether new to him.

The degree of spirit with which the plantation of vineyards had commenced in the colony,

previous to the writer's departure, in February, 1831, left in his mind no doubt of ultimate success. He himself had been the medium of distributing upwards of 20,000 vine cuttings among upwards of fifty individuals, during the previous season, and many others were disappointed in their wishes to obtain a supply. The very fair quality of the wine made by Mr. Sadleir, at the Orphan School, near Liverpool, during two successive seasons, had also proved, beyond a doubt, that the colony was capable of yielding a very superior produce, from vines of a greater age, and on a more suitable soil, than that on which the vineyard at the Orphan School is planted *.

The writer was, however, aware that most of the information which the colony possessed, upon

* The writer having been favoured with ten gallons of this wine, of the vintage 1829-30, he took one-half of it to England in a small cask, and the other half in bottles. On his arrival in London, he had the whole put into pint bottles, and distributed among persons interested in the colony. Some of that which was taken home in bottles had spoiled, owing, as he is inclined to believe, to the bottles not having been previously washed with sufficient care. The whole of what was contained in the cask, although it had never been racked off or clarified, was perfectly sound; and was pronounced, by every person who tasted it, including a very eminent Oporto wine merchant, and a very respectable Bourdeaux wine merchant, to be a very promising wine. The latter told the writer

this subject, was derived from the practice of a much colder climate; and though firmly persuaded that, in spite of any obstacles which might arise, the cultivation of vineyards would be eventually established as an important branch of the agriculture of the colony—yet he conceived that a knowledge of the practice, pursued in more analogous climates, might do much to hasten this period, by the greater confidence it would inspire, and by the caution it would afford against errors that might otherwise require a lengthened and expensive experience to correct.

There was, however, one important product of the vine upon which the colony possessed little or no information; and upon which, although it formed the principal object of his expedition, the

that he had opened one of the bottles given him, when he had a party to dinner. Among the company were two of his own countrymen. “You know,” he observed, “that my countrymen always drink very light wine; they therefore found it strong, and thought it resembled port without brandy. I said, I found it more like Burgundy, and they agreed with me that it was so.” The Oporto wine merchant observed that the wine was sound, but that it would very soon turn sour if not fortified with brandy. The writer has this day (25th October, 1832) opened a bottle which he brought back with him to Sydney, and has found it perfectly sound; and, in his opinion, a well flavoured and strong-bodied wine.

writer is happy to say that there is little knowledge to be communicated, beyond that of its extreme simplicity and its great importance. The product to which he alludes is raisins. The writer will not anticipate the contents of his journal, farther than to observe, that at Malaga, the chief seat of this branch of industry, the variety of vine which produces the finest *Muscatel raisins* will only grow in a very limited district. Beyond this district they are obliged to cultivate grapes of a very inferior kind, which it is necessary to preserve by dipping in a *lye*, and which are thence called *Lexia raisins*. The Muscatel raisins are dried in the sun, without undergoing any other process ; and though they, in fact, cost less trouble than the inferior sorts, the average value of the produce of an English acre is about 25*l*. An idea of the profit of this crop, to the Spanish farmer, may be formed from the fact, that the ordinary value of an acre of Lexia raisins does not exceed 5*l*.

Great, however, as the profits of this cultivation must be to the Spanish farmer, they would be more than doubled to the Settler of New South Wales. For, while the duty on the admission of Spanish raisins, of the first quality, into England, is 2*l*. 12*s*. 6*d*., and on the inferior

qualities, 1*l*. and 1*l*. 2*s*. per cwt., the duty on all sorts, from British colonies, is only 10*s*. per cwt*.

By a published account, it appears that the duty paid upon raisins imported into England during 1827, amounted to 163,513*l*.*; and by a return of the exports from Malaga for 1828, the earliest period for which the writer could procure it, it appears that 83,410 boxes, containing 18,617 cwt. of Muscatel raisins, paying the highest duty, were in that year sent from Malaga alone.

It is believed by the writer, that by far the greatest proportion of raisins, paying the highest duty, is imported into England from Malaga; and he therefore thinks, that the whole quantity of raisins, paying the highest import duty in England, may be fairly taken at 30,000 cwt., and the quantity of inferior sorts will accordingly be about 80,000 cwt.

From these statements some idea may be formed of the importance of such a branch of Agriculture to the Colony, should it be found to succeed. From what he has heard of the soil and situation of the district of Illawarra, the writer has great hopes that the Vine yielding the

* Companion to the British Almanac for 1830.

most valuable Muscatel raisin will succeed there ; and should this prove to be the case, it will, undoubtedly make the fortunes of those who first engage in it. But it is also worthy of a trial elsewhere ; and even should this variety prove too delicate for any part of the Colony, the writer has no doubt whatever, that, of the numerous varieties he collected from different parts of France and Spain, several will be found, which, though not equalling it in value, will still prove a very desirable and even profitable article of produce—at least till the consumption of the Colony itself is supplied.

The writer was well aware how few of the varieties of Vines previously imported into the Colony agreed with the climate, and he therefore spared no trouble or expense in obtaining all the varieties of the different districts through which he travelled. A very considerable number of varieties were actually collected by himself from the different vineyards he visited, of the qualities of each of which he obtained a short notice on the spot. Of the other varieties, amounting to upwards of 500, which he obtained from the Botanic Garden of Montpellier, and the Royal Nursery of the Luxembourg at Paris, it is pro-

bable that some will prove different from others in little more than the name, and that some may be of little or no value ; but knowing the changes produced by change of climate in the Vine, he thought it possible that some of those which were reckoned of least value where they were, might yield the most valuable products in the Colony, and he therefore thought none of them beneath his notice.

In conclusion, the writer begs to add, that, throughout his journey, his attention was almost exclusively directed to Agricultural subjects ; and that, in revising his Journal for publication, he has omitted every part of it which did not directly bear upon these subjects. His object was to collect as great a mass of useful information as possible, and he did not, therefore, cease to register his observations, even where they might appear minute and superfluous. It is only from an extensive collection of facts that sound conclusions can be deduced. Those collected here, will, as the writer hopes, convince the Colonists of New South Wales, that when once they have obtained grapes suitable to their climate, and have fixed upon a proper soil, it will require neither great study, nor toil, nor expense, to enable them

to make a good wine ; and that, by a little attention to a few simple principles, they may easily improve upon the practice of most old wine countries, where error has become a habit, and a blind routine has been sanctioned, or rather consecrated, by prescription.

TABLES

OF SPANISH WEIGHTS, MEASURES, AND MONEYS.

WEIGHTS.

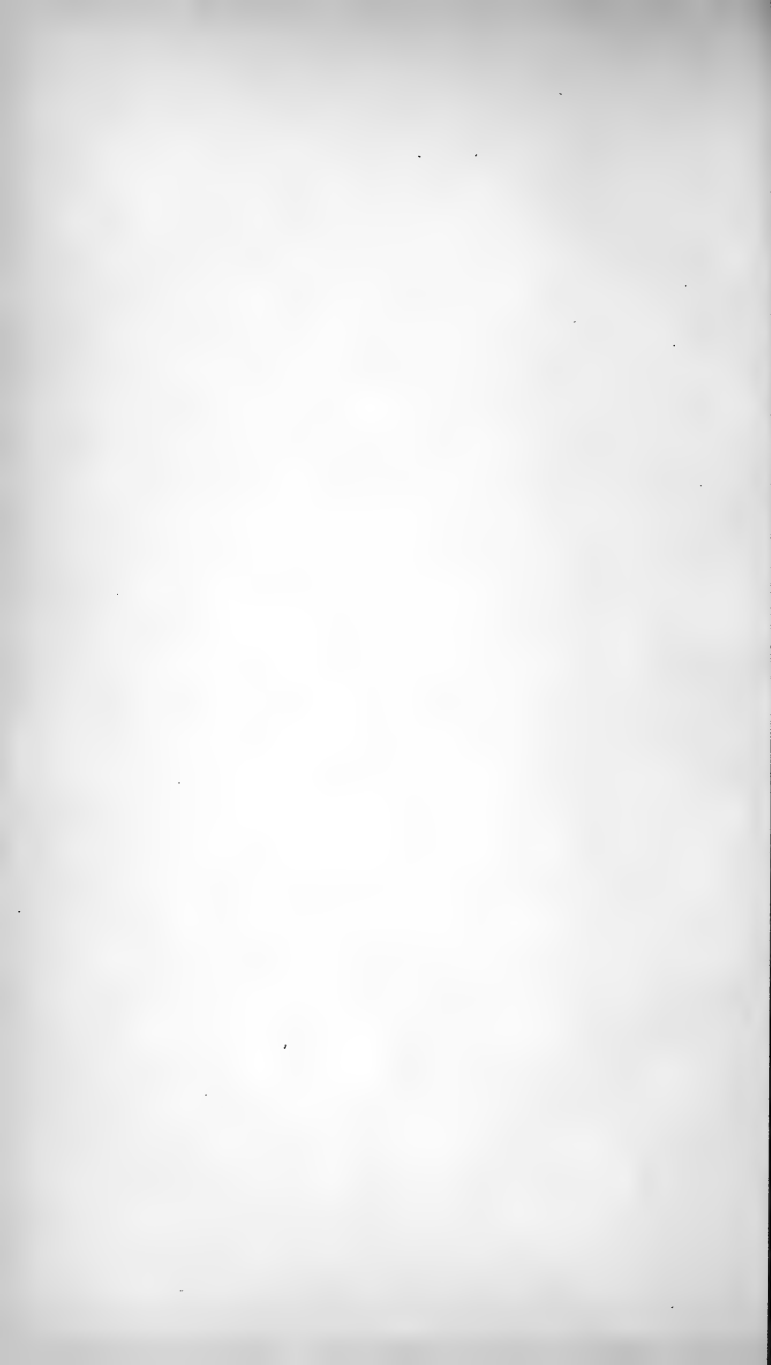
4 Arrobas.....	1 Quintal.
1 Quintal	$102\frac{1}{4}$ lbs. English.

MEASURES.

6 Arrobas Mayores.....	25 Galls. English Old Measure.
1 Butt of Wine contains.....	30 Arrobas Mayores.
12 Arrobas Menores.....	39 Galls. English Old Measure.
1 Pipe of Oil contains.....	34 Arrobas Menores.
25 Arrobas Mayores.....	32 Arrobas Menores.
5 Fanegas.....	1 Quarter English.
27 Varas of Castile	25 Yards English.
Aranzada.....	1 Acre English.

MONEYS.

Piastre, a Hard Dollar, at	
Exch. of 38 <i>d.</i> per Peso,	
or Dollar of Exch.....	About $50\frac{1}{2}$ <i>d.</i>
20 Reals Vellon.....	1 Hard Dollar.
$10\frac{2}{3}$ Reals Plate.....	1 Hard Dollar



JOURNAL, &c.

Monday, 26th September, 1831.—Having embarked at London on the 6th of the present month, I this day landed at Cadiz. I had here the good fortune to meet with Dr. Wilson, an English gentleman, to whom I had brought a letter of introduction; and as he was about to return to the house of his brother, an extensive wine merchant of *Xeres de la Frontera*, I accepted his invitation to accompany him to that place, on Wednesday next.

28th September.—At three o'clock this day, I accordingly joined Dr. Wilson in hiring a passage-boat to cross the Bay of Cadiz, in order to avoid the delay of the common ferry-boat. Port St. Mary's, the town at which we disembarked, is chiefly occupied by persons engaged in the wine trade, and from this place the Sherry wines are shipped. It took an hour and half to cross the bay, and another half hour to engage a *calesa*, and forward our baggage; after which, we proceeded on our journey. For four or five miles out of Port St. Mary's, the country consists of a coarse barren sandstone,

partially covered with gravel, excepting on the banks of the river, which have the appearance of great fertility. We stopped at a *venta* or public-house, to obtain a glass of the wine called *Manzanilla*, the *vin du pays* of the district, which Dr. Wilson assures me is preferred to all other wines by people of all ranks in the country ; it is not known in the cellars of the English merchants, but is a light pleasant beverage, having at the same time a mellowness and flavour, which I have no doubt would, after a little habit, procure for it the preference even of those who would find it insipid at the first trial.

The twilight was far advanced as we entered the wine district—at one place we could distinguish a man with a musket, who had been posted to watch the grapes, it being now the very middle of the vintage. At half-past seven, we entered the town of *Xeres*, which is reckoned one of the richest, if not the very richest in Spain, in proportion to its population, and which owes its wealth entirely to the valuable wines produced in its vicinity.

Friday, 30th September.—A violent storm of wind and rain made it impossible to quit the house yesterday, and though the rain continued to fall at intervals to-day, I managed to visit, in company with Dr. Wilson, the cellars of the house of James Gordon and Company. The extent of these cellars is quite immense—the extreme length of the largest being 110 Spanish *varas*, about 306 English feet, and the breadth 222 feet ; the roof is supported by rows of massive square columns of mason work, and although the whole cellar is not of the above length or breadth, the principal division of the building being only 200 by 150 feet, yet, with its various adjuncts, the whole extent of the cellar is equal to the dimensions first stated. Messrs. Gordon and Company

have also another very extensive cellar, though not equal to this in dimensions. Their ordinary stock of wine is said to be 4000 butts: this is kept in casks of various sizes, containing from one to four butts. These casks are ranged in regular rows; in some parts of the cellar, to the height of four tiers. They are called *soleras*, and are always retained in the cellars. They contain wines of various qualities and ages—from one to fifty years. The wine merchants of *Xeres* never exhaust their stock of finest and oldest wine. According to the price at which the wine expedited to the market is intended to be sold, it contains a larger or smaller proportion of old wine. But it is only in wines of a very high price, that even a small portion of their finest wines is mixed. What is withdrawn from the oldest and finest casks, is made up from the casks which approach them nearest in age and quality, and these are again replenished from the next in age and quality to them. Thus a cask of wine, said to be fifty years old, may contain a portion of the vintages of thirty or forty seasons.

The more respectable of the wine merchants of *Xeres* never ship wine for England till it has attained the age of two years; that is, till the bulk of the wine has attained that age. But according to the price it is proposed to bring, it contains a larger or smaller mixture of a more or less expensive wine. The higher qualities of sherry are made up of wine the bulk of which is from three to five years old, and this is also mixed in various proportions with older wines. Thus, from the gradual mixture of wines of various ages, no wine can be farther from what may be called a *natural wine* than sherry. But, besides giving the wines, as they are prepared for the market, mellowness and richness, by the addition of

older wines, there is a very dry kind of sherry called *Amontillado* or *Montillado*, which abounds in the peculiar nutty flavour that distinguishes sherries, and which is frequently added when that is deficient. Being very light in colour, it is also used to reduce the colour of sherries which are too high; and when, on the other hand, colour is required, the deficiency is made good by the mixture of *boiled wine*, or rather of *boiled must*.

The lowest priced sherries are in general the growth of Port St. Mary's or San Lucar, two districts within ten miles of Xeres; or they are brought round from Malaga to Port St. Mary's, and thence transhipped for England under the name of sherry, perhaps after having been landed and mixed with other wines to give them the qualities in which they are deficient. All these low-priced wines are largely mixed with brandy, being intended for the consumption of a class of people who are unable to judge of any quality in wine but its strength. But brandy is added in very small proportions to the good wines—never in greater quantities than four or five per cent. while they remain in the cellar, and frequently not at all, unless the wine should become *scuddy* or *mothery*; and thus the finest wines are frequently entirely free from it; but, on their shipment, a small dose of brandy is considered absolutely necessary, even to fine wines, to make them bear the voyage, as it is said; but, in reality, because strength is one of the first qualities looked for by the consumers. When wines become *mothery*, in the London Docks, they send them back to be cured, and this curing consists of nothing more than an addition of brandy: perhaps, indeed, it is chiefly effected by the motion of the voyage. The *soleras*, or store-casks, in which the wine is kept, are left with a

void of 1-15th of their contents, and the access of the air is admitted through a loose wooden bung, which merely covers without *closing* the aperture.

The exporters purchase the wine from the growers generally when it is one year old. The cellars throughout Xeres are very numerous, and are the most extensive buildings in the town. The wine constitutes the chief wealth of the inhabitants.

Saturday, 1st October. — The weather being more settled, about mid-day I rode out in company with Dr. Wilson, taking the road to Madrid, in a northerly direction from Xeres. The road immediately after quitting the town was execrable, as well as the streets themselves; but after passing the limits of the town's administration, and coming on to the road supported by the Government, it was much better. The ground we first passed is a sandy loam on both sides, and near the town it was cultivated with great care for vegetables, every farm having its *noria*, or water-wheel, to irrigate the grounds. We saw them planting garlic in small square divisions. The plants were placed on a bank which formed the square, about three inches above the surface. The squares were separated by channels for conveying the water, an interval being left at one of the corners of each square to admit the water to the interior, which was five or six feet in diameter. Some of the squares had also rows of plants on similar situations within them. In this, or a similar manner, all their vegetables are irrigated; and no one would think of laying out a garden unless on a spot where it could be continually irrigated. About a mile from the town we struck off into a plantation of olives: few of the trees, however, contained any considerable quantity, and some were altogether without fruit. Such olives as we

pulled were universally rotten. I was afterwards told, by Mr. Gordon, that all olives are rotten this year, and that this is invariably the case every second year. A little further, we saw a new plantation on the opposite side of the road, and luckily found a peasant under a miserable shed of leaves and straw. To our questions respecting the olives, he informed us that the plants bear a little fruit even the first year; but in the second and third years they bear a considerable crop, in proportion to their size. Some of what we saw had been eighteen months planted, some only six months. The former appeared healthy young trees, covered with a considerable quantity of foliage: the latter had only a few slender shoots, and some of them indeed stood in their original nakedness. These olive plants were nothing else but large limbs of old trees, from eight to ten feet in length, and from two to three inches in diameter. They are sunk about four or five feet into the ground; and the part of the plant above ground is covered, during the first summer, with a cone of earth or clay, to the height of from two to three feet. After leaving this young plantation we struck off to the left, and made for the nearest vineyard across the fields. In consequence of the very heavy rains during the two preceding days, most of the vineyards were deserted; the people in this part of the country almost universally living in the towns. We found no person in the cellar of the first vineyard we entered; but in the next there were two idle peasants lounging about the door of the cellar. Giving our horses to the younger, we entered into conversation with the elder *vinador*. The extent of the vineyard, he said, was 40 *aranzadas*—about $38\frac{1}{4}$ English acres. He said they usually made from 66 to 68 butts of wine; but this year

they had only made 55, when the rains commenced, and he doubted now whether they would make any more. Sixty-seven butts, from $38\frac{1}{4}$ acres, is equal to 223 gallons, *old measure*, per English acre. The soil was of the description called *albariza*, which produces the finest wines. The *vinador* stated, that in replanting a part of the vineyard, they had dug it to the depth of a *vara*, or Spanish yard—about $33\frac{1}{2}$ English inches; but on proceeding to the spot where they had been trenching, and stepping into the trench, I found the surface only came to my knee. From twelve inches below the surface the soil was quite compact, but appeared to differ from the surface soil only in not having been exposed to the atmosphere. According to *Roxas Clementi*, a Spanish writer upon the Vines of Andalusia, the *albariza* soils contain generally about 70 per cent. of carbonate of lime, the remainder of the compound being chiefly alumina, with a very small portion of silica, and occasionally a little magnesia; but in some places it is almost pure carbonate of lime. This soil absorbs every drop of moisture which falls upon it, and never cracks or opens in the greatest heats of summer. I paced over the piece of ground which had been trenched, and found it 45 by 16 paces—about 24 perches. This, he said, had occupied ten men for four days.

The distance of the plants in this vineyard was about five feet each way. Some of the vines were very old, and appeared to be in very bad condition. The *vinador* said they were renewing them gradually, and thus the vineyard was not all in full bearing. Some plants, which were only six years old, appeared extremely vigorous; and as the grapes had not been gathered from a part of them, we counted the bunches on a considerable number, and found them to average eight or nine; and from our

own estimate and that of the *vinador*, the whole weight of the fruit might be from 14 to 16 lbs. on each. All the new varieties, he said, were of the variety called *Uva de Rey*. There was a dunghill of fresh horse-dung collected outside the vineyard; and though we were uncertain whether we understood each other's meaning, we supposed him to say that they manured each plant annually. The plants had each from two to four mother branches, according to their strength, and had almost invariably been pruned down to one or two spurs on each.

In the cellar there were four presses, which consisted of nothing else than large wooden troughs, about eight feet square, and from twelve to fourteen inches deep. This is the general size; and each will contain, at one time, as many grapes as will yield a butt of wine. A coarse wooden screw stands in the centre of the trough, which is worked by a lever not more than five feet long in all, so that each arm is only two and a half feet. In some of the casks which contained the juice that had been last pressed, we observed a vessel, like a very wide funnel, fixed into the bung-hole. The object of this is to return into the cask all the froth and wine which is thrown up in the fermentation; for, in this part of Spain, all the wine is fermented in butts, with only the bung-hole open. By this means all the yeast, which the French are so anxious to get rid of, is returned upon the wine—to *feed it*, as they say. The consequence, of course, is a renewal of the fermentation whenever there is a change of weather, or the cask is put in motion. The wine continues in the butt in which it is fermented till March, when it is racked off the lees. This is the almost universal practice of the country.

In the course of our ride we passed a flock of sheep,

about 250 in number: the majority were black and short woolled. The wool is worked up into common cloth of its original colour. It is worth 3 *reals vellon*—about 7½*d.* per lb. The white sheep were of a totally different breed, with long white fleeces, more resembling hair than wool. We also saw two men on horseback, and several on foot, with a herd of cattle. The horsemen were the proprietors, who had been *mustering*. There were about 300 in the herd, chiefly young, and all dry. The cows had little appearance of milk, and the breed was altogether very bad. This, as I was given to understand, was a fair sample of the sheep and cattle of the province. It is not lawful to enclose corn fields, nor indeed are any enclosures lawful, except for vineyards or gardens. As soon as the grain is off the fields they are common property, and every one who chooses is entitled to send cattle or sheep upon them:—a law which, perhaps more than any other, strikes at the root of agricultural prosperity, and keeps the agriculture of Andalusia in its present barbarous condition.

Monday, 3rd October.—Mr. James Gordon having invited Dr. Wilson and myself to visit a vineyard belonging to him about four miles from Xeres, we accordingly started at about one o'clock; Mr. Gordon riding a black *barb*, or jennet, which he valued at £100, and which he said had cost him £70. We passed out of the town by this direction, as well as by every other, through hills of dung, which had been allowed to accumulate, and appeared to be considered as not worth taking farther. The road lay between immense hedges of the *cactus* or prickly pear, and aloe, planted on the top of high banks, and making a fence which would prove a considerable impediment to the march of an army. Mr.

Gordon pointed out a hedge of prickly pears, two years old; and which, even though it had been on the level ground, would already prove a very tolerable fence. He is of opinion that the original plants, if properly looked after, will form a fence for forty years; and if renewed with occasional fresh plants, would last for ever.

The aloe is also much used for fencing, but is considered by Mr. Gordon as very inferior to the prickly pear, as it dies off whenever it has flowered. There is a prejudice that this plant flowers only once in a hundred years, and it is thence called the centennial aloe. The truth is, that though it is often many years in flowering, when it has once flowered it dies off for ever. If there is any part of the rural economy of the Andalusians which the settler of New South Wales could adopt with advantage, it is the hedge of prickly pears. It is not possible to imagine a more effectual fence, nor one which it would take less trouble to plant or keep in order. It is only necessary to place, at certain distances along the proposed line, a leaf or part of a leaf of the plant. In nineteen cases out of twenty they will take root without any further trouble; and in two years, or three at the farthest, there will be a more effectual fence than a four-railed one. The only objection to this kind of fence is the room it occupies after a few years' growth, if not pruned down; but, in New South Wales, we are not yet so much pressed for room as to make this an objection. To those who may feel inclined to adopt this recommendation it may be a useful hint. Though I was told it was scarcely possible to keep the prickly pears from growing, even by cutting the leaves into small pieces and throwing them on a dry spot, still it would be worth the trouble to place each leaf, or part of a leaf, in

a spadeful of manure, both to insure its striking and its more vigorous growth.

The road to Don Jacobo's vineyard passed at first through banks of albariza, but we presently came to the *arenas*, or sandy soils, which adjoin the Common of Xeres. Don Jacobo's vineyard was in this soil. His people had just re-commenced the vintage after the rain, and were now assembled to dinner; which consisted of a kind of cold soup made from water, with oil, vinegar, salt, and pepper, and salads scraped down or cut small. The more substantial part of the meal was bread, prickly pears, sweet pepper, and grapes.

I here tasted some of the boiled must which is used for colouring the wine. It was literally the *quintessence* of the *must*, having been boiled down to a fifth part of its original bulk. It was as thick as treacle and resembled it in flavour, but with a strong burned taste.

Don Jacobo Gordon's vineyard yielded him, when in a good state, from $2\frac{1}{2}$ to 4 butts of wine per acre. At present it is in a course of renewal, having been ruined by the spread of a kind of grass, which sends its roots to the depth of four feet. A certain portion, which had been planted within the last five years, appeared to be in a good state of bearing; another part was only two years old. The young vines were all very healthy, and had been cut down to two or three mother branches, with one knot on each. In forming the young vines, as well as in pruning them afterwards, great care is taken to have the branches in such a direction that they will balance each other upon the stock, the latter being generally from 12 to 18 inches from the ground before the branches spring out. The object of this care is, of course, to support the bunches from the ground without the aid of

props or stakes. It cost £56 an acre to renew the plantation of this vineyard, it being necessary to trench it to the depth of four feet, in order to get out the grass. The soil, as turned up, even from that depth, was extremely sandy. The plants here, as elsewhere throughout the district, were at the distance of five feet from each other in both directions. The varieties which had been planted were the *Pedro Ximenes* and *Uva de Rey*, white, and the *Tintilla*, black. Black grapes are, however, very rarely cultivated here. The different varieties were planted in distinct divisions. I observed that some of the old vines which it was intended to eradicate this season, were loaded with grapes, having been pruned to carry as many as possible. This is what the French called *charge a mort*, and the practice here was known by a name of similar import. The vines are regularly manured with any kind of dung,—in general strong stable dung; not every year, because, said Mr. Gordon's chief vinador, who accompanied us, they could not procure it. He would dung them every year if he had the means, and did not seem to consider that the quality of the wine would be affected by it. But this vineyard, as well as all others on the same kind of soil, only produced inferior wines.

The olive having been mentioned, we were shown two olives which supported a wheel for drawing water from the well. Two posts having been required for this purpose when they were clearing the ground of some olive trees three years ago, they took two of the trunks of these, which were respectively 10 or 12 inches in diameter: they nevertheless took root, and are now covered with strong branches, affording a proof of the great facility with which the olive takes root. The *vinador* said that an olive would produce a crop three years after its

plantation, but not a full crop till its fifth year, and it would reach its greatest perfection in its tenth year. He said a plant ought to be the limb of a tree of the thickness of a man's arm. Being asked how long it would take before a slip, such as we plant in New South Wales, would bear a crop, he appeared to consider the proposal as ridiculous, and said he thought twenty years. He did not consider the oil of young olives inferior to that of the old: the only difference in their value arises from the quantity. The olive is not now cultivated in this district to the same extent as formerly, the superior attention bestowed upon it in the neighbourhood of Seville having made the slovenly cultivation pursued here unprofitable. The trees are planted with considerable regularity, at the distance of 36 or 40 feet. An average crop, Don Jacobo says, "is from $1\frac{1}{4}$ to $1\frac{1}{2}$ *arrobas*," that is, from 5 to 6 English gallons, each tree.

In passing through this vineyard I observed a very considerable variety of grapes, differing not only in appearance but taste; but many of those which were evidently distinct were said by the *vinador* to be the same. He would not admit that there were more than four or five kinds. I should have judged the number to be not fewer than twenty; and Mr. Cormack, a member of Mr. Wilson's house, afterwards informed me that there was at least that number of varieties in all the vineyards round Xeres, and he thought this was one cause of the excellence of the wine. On our way back to town I examined one of the norias which supplies Xeres with water. The well was about 40 feet in depth, and 7 in diameter. The machinery by which the water is raised is of the rudest construction. An horizontal wheel with large teeth turns a vertical one of about five feet in

diameter ; over this wheel passes a flat band, made of a kind of grass, to which earthen pots are attached over its whole extent. The pots go down empty at one side and come up full at the other. The water is thus raised to a cistern of sufficient elevation to send the water to the town, about a mile off. It struck me that any settler of New South Wales could construct such a piece of machinery with his own men, and even without the aid of a mechanic.

Tuesday, 4th of October.—About 10 this morning, in company with my indefatigable friend Dr. Wilson, I started to visit the vineyard of *Don Pedro Domecq*, celebrated, under the name of *Machar Nudo*, for producing first-rate sherry wines. After quitting the immediate vicinity of the town, we passed over open downs which bore the appearance of having been under crop, but without a single enclosure or land mark so far as we could observe. The downs were skirted on the left by the chalky hills (*albarizas*), covered with the vine, and carefully enclosed by hedges of the prickly pear and aloë, planted as usual on the tops of high banks. We passed three ploughs at work, following on the same furrow. The plough is of the rudest construction, exactly similar to what are represented in those plates which exhibit the first invented implements of agriculture. There is no mould-board, and the plough consequently makes only a series of drills, without turning a single furrow. It has only one handle, and is sometimes held in the right and sometimes in the left hand, the mules with which they generally plough being guided and driven with the other hand. As usual, when riding among vineyards, we entered the *albarizas* through a road between steep banks and hedges—the bottom of the road being in

general the compact stratum of chalk. Don Pedro's vineyard lies in a north-easterly direction from Xeres, and consists entirely of chalky hills. It was evident, on entering the enclosure, that the vines were treated with much greater care than any we had examined. The mother branches were better balanced and supported from the ground, and were regularly pruned; and not a weed or a blade of grass was to be seen among them. The immediate vicinity of the house was tastefully planted with a profusion of ornamental trees, within which was an extensive paved court, surrounded by a wall and railing; the cellars were on a much larger scale than in any of the vineyards we had before seen or passed; the house neither large nor convenient, and in a great degree spoiled by some of the rooms being made the passages to a high tower which he has built to have a view of all parts of the vineyard, and which has been carried to a great height in order to command a prospect of Cadiz, on the south-west, and Seville to the north. "A certain man planted a vineyard, and hedged it round, and having digged a wine press, and *built a tower*, he let it out to husbandmen." Every vineyard, of any considerable extent here, has also its tower, but, in general, they are less than half the height of that of *Machar Nudo*. Mr. Domecq is a gentleman of French extraction, and speaks English fluently. We found him under the verandah of his wine cellar, and having mentioned the object of our visit, he undertook, with great readiness, to give us all the information we should ask: he answered my questions and explained his proceedings in the manner of a man who was thoroughly acquainted with his subject, and had not been accustomed to follow blindly the practices he had found established. He said he was gradually

renewing his vineyards, the vines having been destroyed in many places by a very destructive insect—a small white worm, with a black head, which eats into the heart of the old stock and destroys it: vines, he said, which would have been good for 150 years, were thus rendered useless—they were now 40 years old: he attributed it to injudicious pruning. It was customary to cut off the bearing branch close to the old wood; by this means the worm either obtained an entrance to the heart of the stock full grown, or was deposited in the egg, on the decayed part, and worked its way in when formed. A footing once obtained, there was no mode of getting rid of it, and the consequence was that the vines became every year more injured in health, till they were at length incapable of yielding a crop. The system which Don Pedro adopted in pruning was to leave one knot of the branch cut off, which prevented the entrance of the insect into the stock.

His mode of pruning differed from what we had previously observed: instead of leaving only one, or at most two knots on each of three or four branches, as was the case in the other vineyards we had examined, he left one branch with seven or eight knots, and two others with one knot each, pruning them down alternately; he did not consider that this was burthening a young and healthy vine too much; he was in the habit of manuring his vineyards, but not each year in the same place. He considered it a disadvantage to have many varieties, and was confining his new plantations to three or four. He said that all the varieties mentioned by *Roxas Clemente* were to be found in the vineyards of Xeres, but the proprietors were all anxious to make it be believed that their vineyards contained only the most celebrated sorts. Don Pedro

Domecq's vineyard contains about 200 acres, and yields from 600 to 800 butts of wine, according to the season. This year a large proportion of the grapes in his vineyard, as well as in other vineyards throughout the country, had rotted in consequence of the season having been unusually wet. He said that in future years he should take care to prevent this result, by unleaving the vines, and allowing the rays of the sun to reach the grapes. He trenched the ground to the depth of a *vara* (33 inches); he said he did not consider it advantageous to go very deep, it allowed the roots to penetrate too far from the heat of the air; he did not approve of the practice usual in the country of leaving holes about the foot of the vines, for the purpose of collecting the moisture to the roots; he preferred having it all well dug over; this was done three or even four times a-year, and when first dressed in the winter after the pruning, it is turned up to the depth of 14 or 15 inches.

On entering his cellar, or rather pressing-room, we found the labourers at their dinner. Bread seemed here, as elsewhere, the chief article of their diet. There was also abundance of prickly pears and grapes. We passed to the cellar where the new-made wine was stowed, and tasted it in its various states. The wine of a fortnight old was still very sweet, although the fermentation was now barely sensible. We also tasted the sweet wine of the same age, made from the *Pedro Ximenes* grape, and we conceived it to be barely possible for any thing to be more luscious, although we were informed that in a dry season it is much richer. He said he had about 200 butts of the sweet wine, and wished it were all of that quality, it was so useful in mixing with his purchased wine for exportation. We observed some casks marked *podrida*, as

being made from rotten grapes, and asked if there was not great danger of that wine turning out ill. He replied yes, by the ordinary management of the country, but he had adopted a different system of treatment. He said, that instead of putting a funnel into the bunghole of the cask to prevent the scum from escaping, no sooner was the violence of the fermentation over than he filled up the cask, in order that it might work over and escape. He also racked off his wine into clean casks at the end of two months, or even a shorter period, instead of allowing it to remain in the cask in which it was fermented till March or April, as was the general custom. He says that brandy is added to the sherry wines, chiefly on account of the taste of the English, who are its principal consumers; but it is also useful in preventing scuddiness, and curing it when it has taken place. Don Pedro perfectly agreed in an opinion which I offered, that if wines were made with sound grapes only, and more perfectly fermented, this scuddiness would never occur. I represented to him the advantage of large vats for fermenting the wine. He acknowledged the probability of a more perfect fermentation taking place in large vats, and of the wine being the earlier ready for the market in consequence; but objected, that where there were 700 or 800 butts to make, it would require so great a number of vats, that it would not be practicable. I explained to him that the fermentation would be so much sooner over in consequence of its violence, that the wine might be in general drawn off into casks after five or six days, and thus the same vats might be used many times; for in consequence of the care that is observed in the vineyards which yield sherry, to have all the grapes thoroughly ripe, the vintage will frequently continue for six weeks, commencing about the middle of

September, and seldom being completed till the end of October. In the vineyards yielding the common wines this is not the case; when the majority of the grapes are ripe, they gather the whole, and their vintage is over in 8 or 10 days. My observation, as to the shortness of the time it would be requisite to keep the wine in the vats, appeared to get over his difficulty; and from what he said, I think it likely that he will not allow another vintage to pass without giving them a trial. He said he was sensible of the advantage of *sulphuring* wine, but that it was difficult to prevent the taste from remaining: and that it sometimes happened that the English merchant would not be persuaded that there was no taste of sulphur, even when none had been used. He had got M'Culloch's book, and was aware of the qualities of the sulphate of potash, which that writer so strongly recommends. On returning from the cellar to the pressing-room we found the presses at work. There were eight troughs, similar in shape and dimensions to those formerly described, each with its wooden screw in the centre. A large quantity of grapes being heaped up in one part of the trough, they commence by strewing upon them as much powdered gypsum, or sulphate of lime, as a man can take up with both hands. A portion of the grapes are then spread over the bottom of the remainder of the trough, upon which the men jump with great violence, having wooden shoes, with nails to prevent their slipping. After the greater part of the grapes are pretty well broken, they are piled up round the screw, and a flat band, made of a kind of grass, is wound round the pile, commencing at the bottom, the broken grapes being heaped and pressed in as the band is wrapped higher and higher, till they are all compressed into it. They then

commence working the screw, and the *must* flows with great rapidity. The bottom of the troughs are elevated about $2\frac{1}{2}$ feet above the floor of the cellar, and each has two spouts, under which tubs are placed, and jars in the tubs; and as the jars are filled, they are carried away and emptied into the butts. When the whole operation is completed, the bulk of the husks or skins is not more than one-sixth or one-seventh of what the grapes appeared when first placed in the troughs. This is almost the universal practice of the country; but some persons pour a jar of water over the grapes at the same time that they strew the gypsum upon them. And it is usual to add water to the skins and husks, and then to tread and press them again. This yields an inferior wine, but is generally added in the state of *must* to the produce of the first pressing. It has been observed, that in very dry seasons, the *agua pies*, as this is called, is almost equal to the *yemas*, or first running. Don Pedro's cellar contained eight of these presses, all of which were at work; but he was erecting a press upon scientific principles, the plan of which he had procured from France. I did not wait to examine its construction. The vintagers brought in the grapes as they gathered them, in buckets or pails, which they carried upon their shoulders. I was astonished to observe that so little attention was paid to the quality of the grapes put into the press. I had previously observed in every mule or ass load, which I had seen conveying grapes from the vineyard towards the town, that a large proportion was decayed, but I thought it probable that some selection would be made before pressing. Here, however, I observed that three-fourths of the grapes had burst in consequence of the rain; and, perhaps, from one-third to one-half appeared to be far advanced towards

putrefaction, but the *must* that ran from them was nevertheless perfectly sweet. Observing so little selection in a vineyard where more care was taken than in any other we had seen, and some science really indicated by the proprietor, I concluded that nothing was more common than for the grapes to be in a state of decay when the wine was made. It was evident that if baskets had been employed in which to gather the grapes, a great proportion of the juice would have been lost; but there was an immense waste of labour in each vintager bringing what he had gathered the whole way to the cellar. If Don Pedro had left roads for a cart, or even paths for a mule through his vineyard, he might have brought his grapes to the press with half the manual labour he now employs. Having an engagement to dine with Don Jacobo Gordon at 3 o'clock, we quitted Don Pedro Domecq's vineyard sooner than I would have wished to part with its intelligent proprietor. He is the largest holder of wine in Xeres, and exports more than any other merchant.

Wednesday, 5th October.—At seven this morning I took leave of my hospitable and very attentive friends at *Xeres de la Frontera*; Doctor Wilson having engaged, at the proper season, to procure and send me to London cuttings of all the varieties of vines cultivated in that neighbourhood. I had engaged a *calesa*—a wretched sort of gig, to convey me to San Lucar, there to join the steam-boat for Seville, this being considered my best route to Malaga, whither I now proposed to make the best of my way. We had only proceeded three or four miles, when one of the wheels became loosened, and the *Calesera* had no means of repairing the damage, there was nothing therefore for it but to return. Accompanied by Dr. Wilson, I rode out in a different direction from any we had

previously taken, and stopped to examine more particularly one of the *norias* which supply Xeres with water. We entered a stable and ascended to the loft where the mules work: the ascent is without steps, to allow the mules to go up and down. The elevation of this loft was 10 feet—the mules were not at work, and the driver lighted a piece of rope and let it down into the well to show us its depth; the well is about 7 feet in diameter, and 25 varas (about 70 feet) to the water, which has a depth of 11 feet, making the whole depth of the well about 80 feet.

The circle round which the mule treads is 30 or 35 feet in diameter; the horizontal wheel is 10 feet; the vertical wheel 8. They act upon each other by a series of teeth, which are merely pegs fixed to the outside of the wheel. The teeth projecting from the horizontal wheel were 10 inches; those from the vertical wheel 8 inches in length. The horizontal wheel is turned by a lever attached to the top of the beam, about 10 or 11 feet in height, and falling at an angle to the height of the shoulders of the mule. The circular bands, to which are attached the earthen jars, are made of a kind of grass which is in general use for that purpose. The jars are separate about six or seven inches, and are very deep in proportion to their width; they are fixed between the two bands, by cords passing round the middle (where their girth is least), and near the top; the whole length of the circular bands is of course twice the depth of the well; the number of the pots is 37, and they are about four feet apart. When the wheel is set in motion, they descend empty on one side, and passing through the water, rise nearly full on the other side of the well; there are small holes in the bottom of the jars to allow the air to escape when they enter the water, there is consequently

a constant leakage from jar to jar as they ascend. Each of the jars delivers from four to five English pints at each revolution of the wheel (of ropes). The trough, into which they are emptied as the wheel turns, is on a level with its centre. When there is a greater demand for water in the very dry season, they double the number of pots, putting one between each of those now in use, and yoking a second mule. They thus double the quantity of water delivered in the same time. The water is conveyed to the town in earthen pipes, and sold from the cistern to which it flows, the *norias* being all private property.

Having finished our examination of the *noria*, we proceeded to the adjoining vineyard, where half a dozen men were employed in gathering the grapes; this vineyard is situated in what are called the *arenas* (sands): the soil is a light sandy loam, and though surrounded by hills of chalk, did not appear on trial to contain the smallest portion of calcareous matter.

The soil seemed capable of supporting a more vigorous vegetation than at any place we had visited, and the vines were pruned accordingly. On each vine there was at least one long branch, containing from eight to ten knots, and from two to four spurs, with one or two knots each. On some vines there were two branches, one containing eight or ten knots, the other four or five, beside three or four spurs, with one or two knots each. On one or two vines, which seemed very heavily charged, I counted twelve knots on one branch, and seven spurs; the crop was in proportion, many of the vines producing twenty bunches and upwards. The average weight of fruit on each vine could not be less than from 25 to 30lbs. The *vinador* said, the extent of the vineyard was ten aranzadas—(9 acres, 2 roods, 10 perches); the produce

varied according to the season, from forty to fifty butts; forty-five butts is about six hundred gallons, old measure, for each English acre. The other vineyards in the arenas seemed to be pruned in the same manner, and to be fully as heavily charged with fruit. The *vinador* said the wine was of very good quality. The grapes were chiefly the variety called *Uva el Rey*—but there were also a very few of the *Pedro Ximenes*, and one or two other varieties. The vines in this vineyard appeared to be in the highest state of health, and had evidently been treated with the greatest care from the commencement. They were now 25 years of age,—the branches were so well arranged that they balanced each other upon the stock; and few props were therefore required, the height of the stock being from 16 to 20 inches. Where from the weight of fruit a prop was required, it consisted of a piece of cane, with a fork cut in the end of it, and in this fork the branch rested. A small spot in the vineyard had been newly planted; he said the ground had been trenched to the depth of a *vara*, or a *vara* and a quarter. These vines were only manured once in four or five years; the reason of this, he said, was that the ground was not so cold as the albarizas, and did not require it oftener.

As the grapes were collected they were spread out on large mats in the sun's rays. This is very commonly the practice in ordinary seasons: but owing to the late heavy rains coming upon the grapes when the most of them were fully ripe, they are in general hastening on the vintage this season without attending to it. The *vinador* said they would be put in the press to-night and pressed next morning.

Mr. Cormack says, that this vineyard produces only the common wine of the country, and from the way it was cultivated he was sure it must yield 6 or 7 butts an

acre, but he understood that a large portion of the grapes were sent to the market. The *arenas*, in general, he says, yield from 4 to 6 butts a Spanish acre, which is worth, on being made, about 22 *pesos* of 15 rials each. Thus, 5 butts will amount to $82\frac{1}{2}$ Spanish dollars, which is equal to about £17 10s. per aranzada, or £18 10s. per English acre. This vineyard, he informed me, was worth 300 dollars per aranzada, or about £66 an English acre. The Albariza vineyards yield, on an average, from $2\frac{1}{2}$ to 3 butts per aranzada, which is worth, including the *agua pies*, this year (October 1831), 38 *pesos* per butt,— $2\frac{3}{4}$ butts amount therefore to £16 13s. 9d., or about £17 10s. per English acre. Mr. Domecq's vineyard was some time ago valued at 40,000 Spanish dollars. The extent being 191 English acres, and the buildings at that time worth 3,000 or 4,000 dollars, the value of the whole will appear to be £7,756 5s., or about £40 12s per English acre, the average produce being about 800 butts.—This at 38 *pesos*, will amount to £4,275 for the value of one year's produce of the whole, or £22 7s. per acre. The expenses of cultivation are stated by Mr. Cormack to be from 50 to 60 dollars per aranzada, and this also agrees pretty nearly with Mr. Domecq's statement. It therefore appears that the profit upon an acre of the *arenas* will be about £7 10s.; upon the ordinary *albariza*, £5 13s. 9d.; on Mr. Domecq's, £11 7s. I am inclined to think that this estimate is pretty correct, as it applies to the *arenas*, but it is probably under-rated in the *albarizas* generally, and over-rated in Mr. Domecq's.

The whole extent of the Xeres vineyards, which produce wine fit for the English market, does not exceed 7,000 acres, and about double that extent will also include

those of Port Saint Mary's and San Lucar. A great portion of the wines exported, to England under the name of Sherry, are the growth of Malaga, and are brought round and transhipped at Cadiz. Most of the Sherries sold by retail in England, under 40s. a dozen, are either of this kind or of the commonest qualities of the San Lucar and Port St. Mary's vineyards. The whole quantity of Sherry annually exported from Xeres, does not exceed 25,000 butts. In no case do the exporters send a genuine natural wine—that is, a wine as it comes from the press without a mixture of other qualities. It is rather a singular circumstance that the sale of the produce of the common vineyards is more ready and certain than of that fit for exportation. The latter is all purchased up by a few individuals, and held by them till it is taken off by the gradual demand. The stock is equal to many years' consumption, and some of the holders are said to possess stocks to the amount of a million dollars. No wine is allowed by law to be sold for consumption till it is twelve months old. The produce of the arenas is much greater than of the albarizas, but a greater quantity of it turns sour. The very dry wine called Amontillado, is generally said to be produced in a way which no one can account for, as it is not possible to say beforehand whether the wine, when fermenting, will turn out Sherry or Amontillado. If so, it is probable it is the result of a more perfect fermentation; indeed, Mr. Domecq agreed with me in this opinion. Rafael Torda, a Spanish writer on wines, says, that it is the produce of a particular grape, the *Palomina*. Although the Manzanilla and common wine of the country are more apt to turn sour than the Sherry, the latter is also occasionally subject to that degeneration. Mr. Domecq said, that as many as 100

butts of the *Machar Nudo* had turned sour in one season, —whether after the adoption of the plan of allowing the scum to escape during the fermentation, instead of returning it by the funnel upon the wine, I did not inquire. Perhaps it may be owing to the grapes of part of the vineyard being of an inferior quality, or there may be something in the soil or exposure which prevents their attaining perfection. Mr. Domecq said, that there are very few of the grapes which are good, even in the albariza vineyards, and that the finest sherries are produced from two or three varieties which are rather scarce,—of one variety he found great difficulty in procuring cuttings, there not being more than two acres of it in the district of Xeres. Scuddiness is, however, the most prevailing defect in the Sherry wines, and it is worth consideration whether this is not owing to imperfect fermentation. We tasted wine in Mr. Domecq's cellar which was quite sweet, although three weeks old. The violence of the first fermentation is suppressed by the smallness of the vessel in which it takes place; and until the original principles of the *must*, which remain undecomposed, are separated by subsequent repeated rackings, or changed, after a great length of time, into alcohol, they are always liable to rise through the wine, and produce this scuddiness. It is probable, also, that the absorption of the tartaric acid which the grapes may contain, by the use of gypsum, may be a still further hinderance to the fermentation. On the whole, I think there can be no doubt that were the fermentation completed in large vessels, and the wine subsequently racked off into casks, this scuddiness would never appear; and, considering, the general richness of the grapes of this country in saccharine matter, there would be as little danger of acidity if the casks were thoroughly

closed to the air when the fermentation should have ceased.

Thursday, 6th October.—This morning I again started in a calesa, and, after about four hours' travelling, accomplished the journey to the little town of *Bonanza*, above San Lucar, the distance being 4 leagues. The road was not *made* in any place, but there were bridges at spots which would be otherwise impassable. After about three or four miles' travelling, I quitted the vineyards, which for that distance crowned the chalky hills on both sides of the valley through which the road passed. The country was now open, and without a single tree or enclosure. I passed several farm steadings, if indeed they are worthy of the name. The buildings were of the most wretched description, and in the worst possible repair, contrasting in this respect most strongly with the cellars and pressing-houses in the vineyards, all of which were in good order and well whitewashed. Here, however, no farmer lives upon his farm. At seed time he comes with a sufficient number of people to plough up and sow the land, and returns to the town till the season of harvest again calls him forth. The harvest is collected to a convenient spot, where the grain is trodden out by horses and cattle, and the straw is most generally burned,—and this closes the labours of the year. At one place I saw seven men ploughing, each with a pair of oxen, and following each other in the same furrow. The oxen were yoked by the head—the yokes resting immediately behind the horns, and being secured round the forehead of the animals. Near Bonanza I passed several steep hills of albariza, covered with vines, and terraced on the more precipitous sides.

The banks of the Guadalquivir, for ten miles above Bonanza, are low alluvial flats, apparently of great extent; and they appeared, perhaps in consequence of the late heavy rains, too wet to bear the pasturage of cattle. From that distance the lands on both sides bore the marks of cultivation, and were covered with cattle and horses. The hills which bounded these alluvial flats were covered with olives. In several places they were gathering Indian corn and millet.—On approaching Seville there was here and there a plantation of oranges. The alluvial banks had very much contracted in extent, and, though higher than those lower down the river, were in no place more than four feet above the water; but the river was very muddy, and was probably swelled in consequence of the rains.

Friday, 7th Oct., Seville.—I find that the *ordinario*, or carrier, with whom I was recommended to travel to Malaga, is not now here, and is not expected for several days. I am told on all hands, that it would be madness to attempt travelling in any other way, as the roads are so much infested with robbers, that every person who attempts to travel, unless under the protection of the *ordinario*, is sure to be stripped. The latter personage purchases immunity for himself and his passengers, by paying a sort of *blackmail* every journey. During the week which I remained at Seville, waiting for the carrier, I made two short excursions to the country. I had understood at Xeres, that the neighbourhood of Seville was famous for its plantations of olives, and I was anxious, during my stay here, to learn as much as possible on that subject. My first expedition was to the ruins of an ancient Roman city, named *Italica*, which stood on the opposite side of the river, about two leagues

above where Seville now stands, with the double object of visiting the ruins, and a Convent of Hieronomite monks, who had extensive olive plantations, and presses for extracting the oil. I was accompanied by a gentleman belonging to an English mercantile house, to the head of which I had brought a letter of introduction.

We passed one vineyard, the only one I saw within many miles of Seville; and the wine of this, the *calesera* said, was not good. We made our first visit to the convent, as it was now 11 o'clock, and the dinner hour of the monks was 12. A monk, whom we met in the outer yard, desired one of their farming men to show us the oil press—a very clumsy affair. The press consists of a beam of immense length, and not less than five cubic feet in thickness, at the thickest part. The pivot or hinge, on which this lever works, is placed at about one-fourth of the length of the beam from its thickest end. The long arm of the lever is pressed upwards by a screw, and the thick end is thus pressed down upon the olives which are placed under it, enclosed in a kind of mat made of grass, after having been broken in a mill. There were two of these levers in the house. The man who showed us the presses said, that a good olive tree would yield from three to four *fanegas* of olives in a good year, and that generally a *funega* of olives would yield an arroba (about $4\frac{1}{4}$ gallons) of oil.—From the oil presses we went to the garden, where there are a few fruit trees, and where they cultivate vegetables. There was neither variety in the plants, nor taste in their distribution; but here, as elsewhere, there was a *noria* at work, with one ox. The water was conveyed throughout the garden by small canals. The *procurador*, or steward of the convent, to whom notice had been

sent by the first monk of our wish to see the premises, had returned an answer that he was occupied and could not come. We now went up to the granary, and found him employed in taking an account of a quantity of wheat which some men were conveying from one part of the granary to another. Don Peres, my companion, expressed to him my wish to see every thing that was to be seen, and particularly the oil presses. "Ah," he replied, "the English are a very ingenious people; but they already know every thing sufficiently well, and do not need to be instructed." He therefore saw us walking about the granary without stirring from his seat, or offering a single observation, and he seemed very well pleased when we took our leave. The granary contained a considerable quantity of very fair wheat, also some Indian corn and millet. I looked in vain to discover a single weevil, and found that this insect, which occasions such ravages with us, was only known here by name. As we proceeded to Italica we found a large number of people shelling maize—the greater part belonging to the monks, who are the proprietors and farmers of most of the land surrounding their convent. Their mode of shelling was to take a blunt iron instrument (most of them used the back of a reaping hook, or the instrument with which they clean their ploughs), and holding the cob in their left hand, with the thick end up, continue striking it till all the corn is off. Each stroke stripped the cob from top to bottom of the place where it was struck. I put the question to several, and they said that one person would thus shell from 4 to 5 fanegas, that is, about from eight to ten bushels in a day, and that they received a rial for each fanega; that is, from the 4th to the 5th of a dollar per day; but they

do not earn such wages at every kind of work. The crop of maize appeared, from the quality of the grain, to have been a fine one, and one of the persons told me that it had yielded at the rate of about 50 bushels an acre. The olives on the trees we examined, in the neighbourhood of the convent, did not appear to have suffered so much as those of Xeres. The man who showed us the presses, said that there was no such thing as a failure in the crop of olives every second year. He said they had all suffered very much this year, in consequence of the rains in summer, but that even this year *their* olives had not failed. On returning we struck off into a field where a lot of men and horses were employed in treading out millet. There were nine horses, and a driver to every three. They were driven round the circle all abreast; the whole superficies of a very large circle, from the centre outwards, being covered with the tops of the millet which had been cut off with very little of the straw. They had begun about mid-day and would finish at night. The produce would be about 80 fanegas—160 bushels. Many of the fields in this neighbourhood are cultivated with corn crops under the olive trees, and they say that the crop is not injured by the latter. The olives are never manured unless the ground under is cultivated, and then they of course receive a share of the advantage which is intended for the corn.

Having been told by the merchant to whom I brought a letter of introduction that a Spanish nobleman, the Marquis del Arco Hermoso, had introduced the Florence mode of preparing oil, which he had learnt during a residence in Tuscany, I determined on visiting his plantation, which lay beyond the town of *Alcala*, about four

leagues from Seville. On this excursion I was accompanied by Don Francisco Dias, a Spanish gentleman who spoke French, and to whom I had brought an introduction from Mr. Gordon, of Xeres. We expected to find the Marquis, who was a particular friend of Don Francisco's, at his plantation.

The town of *Alcala*, perhaps from its excellent situation for water mills, is almost wholly inhabited by bakers, who send their bread to Seville. At almost every door we saw the women sitting picking from the wheat the small stones, and other impurities, which it collects from their rude mode of thrashing.

The Marquis had left his country-house about an hour before our arrival, but we found a very intelligent peasant, who had the management of it in his absence, and who answered my questions with great readiness and intelligence. There are 200 *aranzadas* under olives, which have this year suffered much from the rain. When rain falls in August, as was the case this year, the olives always suffer from it. He estimates the present crop at about 2,000 fanegas of olives, which will yield about 1,500 arrobas of oil; but in a very favourable year the plantation will yield 5,000 fanegas of olives, or about 3,750 arrobas of oil. All the ground we saw was a very light sandy loam. It is ploughed once a-year. They plough an *aranzada* of the olive ground in a day, but not more than half that quantity of the meadow or corn land below. There are five kinds of olives on the estate—one of them, the *La Reyna*, is of a very large size and is pickled for eating. The tree of this variety produces but little fruit, and the fruit when pressed yields very little oil, but it is very highly prized for eating, being as large as a good sized plum.

The mill for grinding, or crushing the olives, consisted of a large circular stone, sloping inwards to the centre, where a sufficient space was left level for a millstone of seven feet in diameter, and 14 inches in thickness, to turn upon its edge. An upright beam, fixed to the centre of the millstone, and turning on a pivot, gave it motion. After having been brought home, the olives lie in a heap, on an average about 15 days before they are crushed. After having been crushed they are put into the press, and it is the common practice to pour hot water upon them, in order to extract the oil. They are pressed thrice, and each time with the addition of boiling water, there being a large boiler built into a furnace to supply the water. The fluid runs from the press to a cistern, and, when it is filled, the oil flows over at the top, leaving the water below, which is cleared away, as necessary. The peasant said, that all the difference between the fine and common oil was, that the former was the virgin juice, drawn off with cold water, and not mixed with the second and third pressings. The press in this cellar was of the same construction as those at the convent: it was 20 paces in length, 14 of which were on the long arm of the beam, and 6 at the short or press end. It must, from its thickness, contain many tons of timber. The oil is kept in large jars, some of which were built into a projecting part of the wall, and were sufficiently capacious to contain 100 gallons each. The fine oil produced by the Marquis is not relished by his countrymen; they say it has no taste, and prefer the rancid oil which they have been accustomed to use.

The trees on this property are reckoned very young for olives, although they are sixty years old. They are pruned every year. A man will prune half an *aranzada*

in a day. But olive trees are said not to require pruning at all, till they are 25 or 30 years old. 200 aranzadas are equal to 191 English acres, and 3,000 arrobas of oil, the average annual produce, are equal to 12,735 English gallons, old measure—about $66\frac{1}{2}$ gallons per English acre.

I do not know, however, whether there was not included in this estimate 40 aranzadas that are entirely planted with the *La Reyna*, which are never pressed for oil. Even with this deduction the produce would fall very far short of what the trees of the Hieronomites were said to produce; namely, from three to four fanegas of olives each tree, each fanega yielding an arroba of oil. An English acre will contain 60 trees, 27 feet apart, which is about the distance they were placed from each other on the Marquis's plantations; and, indeed, 60 was said by the peasant to be the number on each aranzada. 153 acres, bearing 60 trees each, will contain 9,180 trees, and the produce being 3,000 arrobas, it is scarcely one-third of an arroba for each tree.

This comes nearer to Don Jacobo Gordon's statement, that from $1\frac{1}{4}$ to $1\frac{1}{2}$ arroba is reckoned a good return from each tree. The trees of the Hieronomites, as well indeed as the most of those I saw in the neighbourhood of Xeres, were planted on a richer soil, and were of much larger dimensions; but this could never cause such a difference as to reconcile the different statements.

The principal exports from Seville are bitter and sweet oranges, and lemons. The sweet oranges are more cultivated than the bitter. I visited several plantations; one belonging to Mr. Wetherall, the merchant to whom I had brought an introduction. The plants are all

raised from pips of the bitter orange, and when the stocks are four years old they bud them with two or three eyes of the sweet orange. The orange groves are reckoned of great value. The trees are planted at the instance of 21 or 22 feet each way, and, in good years, will yield from 1,000 to 1,200, or even 1,500 oranges each. They are irrigated every ten days, and the soil is disposed in small trenches to allow the water to spread. This plantation was watered by means of a steam engine, which was erected in a neighbouring tan-yard. Seville also exports wool and oil; but very little wool has been exported this season, in consequence of an expectation that Saxony wools would be excluded from the ports of England on account of the *cholera morbus*. Prices have risen so largely, on this account, that the merchants cannot execute the orders of their correspondents. The wools shipped from Seville are those of Estremadura, and are of inferior quality. The chief shipments of the Segovian and Leonesian fleeces are made from Bilboa. I believe no person in New South Wales was aware, at the time the prices of their wools sunk more than 50 per cent. in the English market (4 or 5 years ago), that the Spanish Government had repealed an export duty of two rials (about 5d.) on the wools of Estremadura, and three rials (about 7½d.) on those of Segovia and Leonesia; and thus enabled wools to be exported to a vast extent, which would never otherwise have reached the English market. About 50 vessels, of from 80 to 120 tons burthen, are annually loaded with oranges and lemons at Seville. The chief plantations are at some distance from the town. It appears to be a fruit not much used by the inhabitants themselves. There was scarcely an orange tree to be seen in private

gardens, or in any of the small villages round Seville. At the present season they are gathering the *Grenadilla*, or pomegranate, which is very abundant; and this, with melons, and bread, and olives, seems to constitute, at this season, the principal fare of the common people at all times of the day.

Wednesday, 19th October.—On Thursday morning last I joined the caravan of the *ordinario*, which, on its starting, consisted of six waggons, besides a covered cart with stuffed seats and backs, called a *tertana*, in which were three friars and myself. A number of persons, on asses and on foot, also accompanied us, but these gradually dropt off as we proceeded. It took six days, including a day spent at the town of Antequera, to accomplish the journey to Malaga, a distance of 130 miles. About eight miles before reaching the former town, a party of horsemen came in sight, to the evident consternation of every one. It was said they belonged to the party of Jose Maria, a famous brigand, who has 35 men well mounted and equipped, and levies contributions on all the roads throughout the province. They did not, however, approach nearer than half-a-mile; and one of the muleteers having gone off to them, returned in three quarters of an hour, and said they were not robbers but soldiers. Two miles farther on, however, we stopped at a house where we were told it was customary to make a contribution to guarantee travellers against robbers; and 14 dollars having been collected, we saw no more of the party which caused such alarm.

With little exception, the whole tract of country from Seville to Antequera is of the richest possible description, but in the most wretched state of cultivation. There are no enclosures save here and there a vineyard; and such

is the state of personal insecurity, that no farmer or proprietor ventures to live on his land. The inhabitants are congregated in the towns or in miserable villages, and only visit the distant fields to give them the least possible culture, and to gather in the harvest when ripe. This being a cross-road, the inns were of the meanest description; and the fare, which was undoubtedly superior to the daily fare even of those above the rank of a peasant, was such as to indicate the greatest poverty. I did not see 100 head of cattle, or twice as many sheep, during the whole journey; and only once was butcher's meat set upon the table. My companions seemed to consider themselves fortunate when the bill of fare included a stewed rabbit or hare; and this was in a country rich enough to support ten times its population, in the greatest abundance. From Antequera to Malaga, about 22 miles, the character of the country was totally different. Instead of the rich and extensive plains, bounded by gently rising hills covered with the olive, the road here wound through a continuation of steep rocks and hills, in many places approaching in character to mountains. But here the hand of industry had been at work, and, instead of a track formed by the successive marks of wheels, there was a road cut out of the sides of the hills, and winding through them with considerable art. Here and there also, where a favourable spot was presented, a peasant had established himself; and the plantations of vines and olives, with which his industry had surrounded his habitation, had given to the narrow valleys, and steep declivities of the mountains, an appearance of cultivation and fertility that might be looked for in vain in the wide-spreading and rich valleys through which we had previously passed. As we approached Malaga these plan-

tations became frequent, although the country only presents a succession of steep hills; the soil a loose brown loam, plentifully mixed with the gravel of the strata beneath, which is a blue or grey shale or schistus, turning brown and falling to pieces on exposure to the atmosphere. In many places, as appeared at the sides of the road, there were five or six feet in depth of this loose soil, before it came upon the more solid material. It was evident the vines had been planted without the ground having undergone any previous preparation; and no provision was made, even in the steepest places, to prevent the soil from being washed away. The vines, in general, seemed to be treated in a very slovenly manner; the stock was close to the ground, and numerous weak shoots were springing out in every direction.

It was seven in the evening when we entered Malaga, having been travelling from three o'clock in the morning, at which time we started by torch-light. During the whole of this time the mules had no food, and only one hour's rest, which was afforded them by the overturning of a waggon, and yet they came into Malaga without any symptoms of fatigue.

After enjoying a comfortable night's rest, I proceeded to deliver my letters of introduction. One of these was to Mr. Kirkpatrick, the Hanoverian Consul—a Scotsman by birth—who had resided 40 years in Spain, and whose kindness to travellers is proverbial. I found that the season for preserving raisins had been over for some time; Mr. Kirkpatrick, however, lost no time in ascertaining what information could yet be procured.

Friday, 21st October.—At day-break this morning, a gentleman, whom Mr. Kirkpatrick requested to show me his vineyard, and explain the process of preserving the

grapes, waited upon me, and we set out immediately. Our road lay along the shore, to the eastward, the vineyard of Don Salvador Solier lying in that direction, at the distance of about 14 miles. In the immediate vicinity of Malaga the country is extremely rugged, but every patch where it was possible to thrust in a plant was under cultivation. The rocks consisted of rugged masses of limestone, alternating with the same kind of slaty schist I had previously observed on the road from Antequera. For the first two leagues there were few vineyards, chiefly owing to the ruggedness of the country, which would not admit of cultivation. Beyond that distance almost every hill was covered with vines, the produce of which is all converted into raisins. The grapes are all of the large white Muscatel—the *Muscatel Gordo* of *Roxas Clemente*. This grape, my companion informed me, does not succeed in the interior, and therefore all the Muscatel raisins are made within two leagues of the coast. The Lexia raisins, which are used for puddings, &c., are made in the interior. We arrived at the country-house of Don Salvador at nine o'clock, and, after a substantial breakfast, sallied out to examine the vines. Six or seven workmen were employed in preparing the ground for planting, within a short distance of the house. They did not trench the whole of the ground, but dug out square holes about two feet in diameter, and not more than 20 inches in depth. The distance of the centres of these holes from each other is seven feet, and this is the distance at which the vines on the hills round Malaga seem invariably to be planted. The vineyard I was examining, as well as all those in its vicinity, consisted of a series of steep hills. The soil everywhere was a decomposed slate, mixed with abundance of gravel of the same substance. On the higher

part of the ground this soil appeared rather hard, and required great labour to break it up, but once broken up it is loose for ever; so much so, that it slides away from under the feet even where there is only a slight slope. There is no difference made in the distance at which the vines are planted, between the hills and the valleys; although in many places, on the former, the shoots scarcely extend more than 10 or 12 inches, while in the valleys they extend to the length of as many feet. They never, under any circumstances, manure these vineyards: they say it would give more wood, but would not add to the quantity of the fruit. The branches are pruned closer to the stock than those of any vines I ever saw; nothing but the half-formed buds, at the junction of the old and new wood, being left to produce the wood of the succeeding year. I could not find an instance where the spur had been left long enough to include the first full-formed bud, which is generally from half an inch to an inch from the junction. The number of shoots seemed almost unlimited; I counted from 10 to 22; there was scarcely any vine had fewer than 10, and they generally had from 12 to 15. The stock was close to the ground, and not the slightest effort made to raise the shoots, or support them from the ground. Almost every bunch would therefore lie on the ground; and, were the soil of a less gravelly description, the greater part would without doubt be lost. After the pruning, they dig over the ground and lay bare the stock, in order to scrape off the *barbe*, or small thread-like roots which are near the surface. As scarcely any grass or herb vegetates among these vines, and the soil is always sufficiently loose, it is evident that they require little digging or cleaning. We went out to visit a peasant, a neighbour of Don Salvador's. He said four or five very fine vines might yield raisins enough to

fill a box which contains an *arroba* of 25 lbs.; but throughout the country it would require, on an average, nine or ten. The grapes lose about two-thirds of their weight in drying: this would, therefore, give a produce of 7 or 8 lbs. of grapes to each vine—a calculation which I should think must include a much greater proportion of stunted vines than of luxuriant ones; for the majority of those in Don Salvador's vineyard would, I have no doubt, yield double that quantity. Including, however, those vines which are visible at the tops even of the highest hills, the calculation is likely enough to be correct. The peasant whom we visited was making wine from some of his grapes, which, after having been nearly dried, were spoiled by the rain. In a small skilling, behind the cottage, a portion of the floor, about ten feet square, was elevated above the rest. It was paved with tiles, and a man was busy trampling the raisins, which he had almost reduced to a paste. He heaped them into a corner as he successively passed them under his feet for the press, which was merely a large beam passing along the skilling, without any screw, or any other means of giving it additional power as a lever. A little water was added to the grapes to bring out the juice, and a part of the *must* was on the fire boiling to add to its strength. We tasted some wine made two months before from the *Pedro Ximenes* grape, and also some from that grape mixed with the Muscatel: both were as sweet and luscious as possible. The grapes, when dried, are worth double what they would yield made into wine, and therefore they are never made into wine unless spoiled by the rain.

They usually commence gathering the grapes about the middle of August, choosing only such bunches as are ripe. They return, after a week or two, to make another selection, and so on for a third and fourth time. A place

is always reserved in the vineyard, free from plants, on which to spread the grapes when gathered; and they choose a spot where the soil is of the darkest colour, in order to its keeping the full force of the sun's rays during the day, and retaining the heat during the night. The bunches are spread out separately on the ground, and never allowed to press upon each other:—according to Don Salvador they are only once turned over. At the end of 15 days they are, in general, sufficiently dry. This season was more unfortunate for the early commencement of the rains than any season for many years, and the crop was remarkably fine. It is Don Salvador's intention, in future years, to have wooden *toldos*, or awnings, prepared to shelter the grapes, while drying, against the rains, and also to cover them during the night. He says that the drying of the grapes is so much retarded by their being exposed to the dews during the night, that when he has the means of covering them at night, he expects they will be dried in half the time usual at present. Before the bunches are spread out, the small grapes are picked out, as well as any which may happen to be injured; the small grapes are dried separately. I saw a heap of them in Don Salvador's house, which had the appearance of very large currants. When the grapes are turned, any spoiled ones are, or ought to be picked out; they have no particular rule for judging when they are sufficiently dry,—it is learnt by experience. When they happen to get rain while drying, the stalks become black or rusty-looking, instead of being of a bright light brown. According to Don Salvador, the district which produces the Muscatel grape extends only two leagues farther east; that is, not more than three leagues in all along the coast, and two leagues inwards. He says the value of the land planted with it is about 3,000 rials, or

150 Spanish dollars per *fanega*. There is a piece of land, adjoining their own, which they are anxious to buy ; they would give for it 1,500 rials per *fanega*—to plant it with vines would cost 500 rials more, and there would be no return for three years. Each *fanega*, he says, contains 650 stocks, and as each stock is seven feet apart from its neighbours, the number of square feet in a *fanega* will be 31,850, which is 2 roods 37 perches English measure. It required, he said, ten men for a day to hole a *fanega* for the plantation. If, therefore, 10 stocks give 25 lbs. of raisins, a *fanega* will give 1,625 lbs., or 65 *arrobas* or boxes of 25 lbs. each ; which would be, for an English acre, 2,222 lbs. Don Salvador pays his workmen $3\frac{1}{2}$ rials, about $8\frac{3}{4}$ d. a-day, besides food. The food consists of, in the morning, a soup of lentils, &c. ; at dinner, pork ; and, at supper, the *aspachio*, or cold soup, formerly described, bread and grapes at discretion. The whole costs about $5\frac{1}{4}$ rials, or 14d., a-day.

Saturday, 22nd October.—Having read over to Mr. Kirkpatrick my notes of yesterday's excursion, he said that Don Salvador's information was generally correct, but added the following observations :—The Muscatel grape, Mr. Kirkpatrick thinks, must be cultivated as much as four leagues from the coast, but will not succeed beyond that distance. The extent of coast which admits of its cultivation must also be five or six leagues, at least, as the principal cultivation is in the neighbourhood of Velez Malaga, five leagues to the eastward of Malaga.—There are three distinct sorts of raisins :—1st, the Muscatel, which are the finest, and are always packed in boxes of 25 lbs., and half and quarter boxes containing, respectively, the half and quarter of that quantity.—2dly, Sun or Bloom raisins : these are prepared in a manner in every respect similar to the Mus-

catel, but from a different grape—a very long grape, called in the country Uva Larga. These are also generally packed in boxes, but sometimes in casks. Those in boxes are also called *bunch raisins*; the others are generally of an inferior quality, and separate from the stalks. The Sun or Bloom raisins keep better than the Muscatel, and for that reason, it is this description which is usually sent to India. 3dly, the Lexia raisins, which are packed in casks, or grass mats called *frails*. These raisins are of an inferior kind, and require to be dipt in a lye (*Lexia*) of wood ashes, with a little oil, before drying.

Muscatel raisins are worth, to the grower, from 30 to 40 rials a box, according to the season. This year as much as 52 rials was given for some that, with the aid of *toldos*, had been preserved without having been touched by the rain. When Muscatels are 40 rials, or 2 dollars a box of 25 lbs. Blooms are about 30 rials, and Lexia only from 24 to 28 rials per quintal of 100 lbs. Mr. Kirkpatrick says, that 12 English acres make 13 fanegas. According to this calculation, an acre will produce, at $2\frac{1}{2}$ lbs. to each stock, 1,760 lbs.; which, at 40 rials the box, or 4d. a pound, are worth £29 7s.—at 30 rials, £22 an acre. From this must, however, be deducted the expense of 70 boxes, at 4 rials each, which amounts to £2 17s. 6d. Still it seems a most profitable cultivation; so much so, that I incline to think the quantity is less than that estimated. The expenses of cultivation cannot exceed £5 or £6 an acre. The following accounts of the exportation of fruits from Malaga were taken from detailed statements which had been copied from the Custom House Cockets, and were kept in the office of Mr. Kirkpatrick :—

ACCOUNT OF FRUITS EXPORTED FROM MALAGA.

Countries to which exported.		No. of Vessels.	Raisins.			Almonds.			Figs.	Grapes.	Lemons.	Oranges.	Pomegranates.
			Box of 25 lbs. ea	Barls. of 100 lbs. each.	Frails of 56 lbs. ea	Box. of 28 lbs. ea	Barls. of 100 lbs. each.	Frails of 100 lbs. each in shell.	Cases, Barls. & Frails, 56 lbs. ea	Jars, 36 to 40 lbs. each.	Cases of 1000 Lemons	Cases of 1000 Oranges	
Year 1828, from 1st Sept. to 31st Oct.													
England	.	58	83,410	11,624	4503	6775	1017	8	2162	14,573	4984	321	165
France	.	11	21,156	1479	"	"	3	"	2027	25	787	41	"
Holland	.	8	901	3906	"	"	"	"	"	20	1649	78	"
Bremen	.	2	300	1326	"	"	"	"	40	50	170	"	"
Hamburg	.	8	2051	4825	"	"	15	"	565	442	2080	25	"
Copenhagen	.	4	400	3180	380	"	"	"	430	425	660	88	"
Petersburgh	.	3	950	"	"	"	"	"	"	1400	420	"	"
United States	.	13	39,424	7604	"	91	"	595	1680	1430	418	"	"
Totals	.	107	148,592	33,944	4883	6866	1035	603	6904	18,365	11,168	553	165
Year 1829, from 3rd Sept. to 30th Oct.													
England	.	41	52,909	6004	612	2546	535	10	1955	10,862	3942	202	30
France	.	14	31,859	1970	"	"	60	"	1105	48	1275	24	"
Holland	.	9	17,627	4810	50	"	"	"	362	34	1845	54	"
Bremen	.	1	280	720	"	"	"	"	33	33	110	"	"
Hamburg	.	12	6318	3571	"	"	"	50	1230	578	3083	65	"
Copenhagen	.	6	827	4795	"	"	5	"	831	407	1114	10	"
Petersburgh	.	2	500	"	"	"	"	"	"	1400	450	"	"
United States	.	24	89,840	11,379	"	404	62	1501	3494	4921	2169	"	550
Totals	.	109	200,160	33,249	662	2950	662	1561	8977	18,283	13,988	355	580
Year 1830, from 24th August to 27th October.													
England	.	36	45,582	3219	2319	2987	885	4	962	11,105	3938	203	
France	.	11	17,487	1486	"	"	"	"	200	6	115	60	
Holland	.	8	9170	1773	"	"	"	"	1018	97	1649	154	
United States	.	30	127,683	17,778	"	405	16	608	355	5673	2982	"	
Bremen	.	2	510	317	"	"	"	"	78	78	189	"	
Hamburg	.	12	9227	994	"	"	4	"	263	724	3277	79	
Copenhagen	.	5	650	2902	"	"	13	"	625	370	785	"	
Stettin	.	2	107	600	"	"	"	"	"	49	240	"	
Petersburgh	.	3	500	"	"	"	"	"	"	2070	840	10	
Leghorn	.	2	4000	"	"	"	"	"	"	"	"	"	
Genoa	.	1	2000	"	"	"	"	"	20	"	"	"	
Totals	.	112	216,916	29,069	2319	3392	918	612	3443	20,172	14,015	506	

The boxes are partly *Bloom* or *Sun raisins*, but principally *Muscatel*. The barrels and frails are chiefly *Lexias*.

In the spring, shipments are made for the Baltic, and small parcels are sent, at all times, in assorted cargoes. On the whole, Mr. Kirkpatrick is of opinion, that from 20 to 25 per cent. may be added to the shipments of the fruit season, to make up the whole export from Malaga. This would make the whole weight of raisins annually exported from Malaga from 4,000 to 4,500 tons. The almonds shipped from Malaga are of the kind called *Jordan*; and these, as well as the *Muscatel* raisin, will only grow in a very limited district. Mr. Kirkpatrick has this day about 100 women shelling almonds in his yard. This costs three rials a fanega, which yields from 20 to 22 lbs. of shelled almonds. A fanega is the produce of about four trees. The grower gets from three to four dollars for a fanega. The women break each almond separately, laying it on a small anvil, and striking it with a small iron rod; others pick them out from the shells on a table. The confectioners purchase the shells for their fires, and they almost pay the expense of shelling. Such is the superior value of the *Jordan* almond, that the duty upon them in England is £4. 15s. per cwt., which is double that upon the common sorts. The *Jordan* almond is distinguished in appearance from the common, or *Valencia* almond, by its greater length.

Monday, 24th October.—I this day visited the stores of Messrs. Rein and Company, the first mercantile house in Malaga. They were receiving, in one store, *Lexia* raisins from the country. The grower, in the beginning of the season, got ten rials the arroba, of 25 lbs.; the price is now only seven. The quality this season is very

bad ; many of the raisins appeared bruised and burst by the rain. Ten rials the arroba amounts to two dollars per quintal, of 100 pounds—one penny per pound. A peasant, who had come with the fruit, said they would get from ten to twelve quintals from a fanega. The persons in the office seemed to think, that, either from ignorance or intention, he understated the quantity. This would only be twenty-two dollars for a fanega.

Mr. Delius, the clerk of the fruit department, said he thought the estimate of 1,625 pounds of Muscatels from a fanega, was likely to be correct. They usually, he said, expected 60 arrobas—that is, 1,500 pounds, in a good season ; from 50 to 60 arrobas was the average. In the neighbourhood of Messrs. Rein's stores they were packing lemons. The grower gets seven dollars for a case containing 1,000 :—the largest are sent to England. They are each put into a piece of paper by women, who get through the work very rapidly ; they are employed by the day, and get five rials, about one shilling, for their work. The green grapes sent to England are packed in oak saw-dust, which is imported from England for that purpose ; no other kind will answer. It is a coarse fleshy grape called Loja, from the place where it is cultivated ; it keeps till April and May. There is a large black grape very abundant in the markets at present, and also a large green grape, neither of which is distinguished for flavour ; they are sold at four *quartos*, about one penny, a pound.

The house of Rein and Company have extensive sugar plantations at Almunecar, about 30 or 40 miles east of Malaga. I had determined to accompany Mr. Delius, a member of the house, to visit these plantations, in which I felt a great degree of interest, as I was confident, that

if sugar could be cultivated here, it ought to succeed at Port Macquarie. An opportunity of a vessel for Marseilles having, however, presented itself in the mean time, I resolved on taking my passage by her. I procured from Mr. Delius the following information respecting the sugar plantations. Sugar has been cultivated in this part of Spain for nearly 100 years, but never to any very great extent. The plantations at present are more extensive than they have ever been before. The whole produce does not, however, exceed 20,000 quintals, of which 5,000 are produced by their house; 20,000 quintals, of 100 pounds each, are 894 tons. Rein and Company's own plantations are not very extensive, but they have erected a mill and distillery. They receive from the planters the cane, and return them one-half of the manufactured article. Four or five kinds of cane have been cultivated, but they are now confining their attention to the large Otaheite cane, finding it succeed better, and yield a better return. The soil is in general of a loose sandy quality, but very rich, and is also richly manured.

The planting takes place in May, and the canes are cut in February following. The same stools will last for six years. They are cut down to 10 inches from the surface. Six plants are put into one hole, and the holes are not more than three feet apart, so that it is impossible to enter the plantation after the canes have got to a certain height. The ground is cultivated by ploughs with oxen, but of course only when the canes are very young, or in the early part of the season. The cane grows to the thickness of a man's arm, and from 18 feet to 20 feet high. Mr. Delius has seen fifteen feet of ripe cane. A fanega of rich land will yield from 45 to 50 quintals, that is, from 4,500 to 5,000 pounds of sugar. They have a refinery

on the spot. This year their sugar brought 10 per cent. higher than imported sugar; and their rum promises, when old, to be equal to that of the West Indies. It is now two years old, but as they consider that the rum hitherto made has failed to come into use from having been sold to the consumer too early, they intend to hold it for two years longer. The frost sometimes injures the sugar cane a little, but frost seldom occurs. Twice during 20 years Mr. Delius has observed it of the thickness of a dollar in the night. The ordinary range of the thermometer, during the day, in the winter months, is 56 to 58; in May and June 72 to 75; in July and August 78 to 82 or 83, except when once or twice during the season it blows over the land, when it rises to 100. The temperature of the atmosphere along the coast is exceedingly equable. During 20 years Mr. Delius never observed the barometer vary more than an inch; its range is between $29\frac{1}{2}$ and $30\frac{1}{2}$. The sugar cane will not grow except within five miles of the coast. Beyond that distance the frost is greater, and the weather more unsettled. The land planted with sugar cane is irrigated twice or thrice when the shoots are very young, but Mr. Delius thinks not afterwards. All the plantations command the means of irrigation.

With reference to the value of vineyards, a friend of Mr. Kirkpatrick's gave me the following information:—He purchased an estate five years ago. It is situated about two leagues from Malaga, and is all mountain. Vineyards are valued by the number of stocks. An *abrado* contains 1,000 stocks; this at seven feet distance, gives 180 perches, or one acre and 20 perches, as the extent of an *abrado*. In this estate there were 80 *abrados*, or 90 acres, planted with vines, which were in very bad order. Also about 150 acres more, which were not

planted, and were considered of very little value. The price was 5,000 dollars, about 1,050/., nearly 12l. an acre for the vines, counting the remainder as nothing. The produce was very little the first four years: last year 600 arrobas, this year 1,000, and if the next season is favourable, it will produce 1,500 arrobas. The new wine, as soon as the fermentation is over, is worth from nine to ten rials an arroba; 1,500 arrobas are equal to about 4,500 gallons, which is only 50 gallons an acre, and at the highest price only eight dollars and one third per acre. This is so poor a return, both in quantity and value, that it is probable the vineyard is still far from having been brought into full bearing, and that the 150 acres must have been considered worth a considerable part of the price, notwithstanding its depreciation.

The produce of the vineyards round Malaga, which is not converted into raisins, is now chiefly a dry wine. It is similar to Sherry, but very inferior in flavour, and is chiefly taken off by the Americans. The demand from America has greatly increased since the general establishment of temperance societies in that country. This wine retains a sweet taste till it is two years old. The *Old Mountain*, or *Malaga* sweet wine, which was formerly so much in demand, is now almost out of fashion throughout the world, and is very little made. It was formerly the chief export from Malaga.

Friday, 28th October.—Having been introduced to Mr. Bryan, a gentleman of Irish extraction, and brother-in-law to Mr. Heredia, one of the principal merchants in Malaga, I went with him to visit the cellars of the latter. There is no such wine as Malvasia, which is said, in the *Topographie des Vignobles*, to be produced at Malaga. The Muscat wine is very scarce, the raisins being so

much more profitable. They make a white sweet wine with the Pedro Ximenes, and a small portion of the Muscat wine added to it, to give it the flavour of a Muscat wine. The sole difference between this wine and the Mountain, is that the latter is mixed with a portion of *must*, which has been boiled down to one-third ; this also gives it the brown colour. Mr. Bryan says, that within the last two years there has been a great demand for sweet wines from the United States. Most of the wines this year were therefore made sweet, and the farmers are getting a better price. The new wine is, this year, worth to the grower twelve rials the arroba. The difference in the making between the sweet wine and the dry is, that when the grapes are intended for the former, they are spread out for three or four days in the sun. The new wine, when sweet, is worth a third more than when dry. An abrado of 1000 stocks, even in the mountains, Mr. Bryan said, will sometimes yield three or four butts of wine. Mr. Heredia has lately purchased a vineyard of 400 abrades, which they are now improving. In one or two years more they expect it will yield 1,000 butts of wine annually. Mr. Bryan thinks it may contain 500,000 stocks ; he says the varieties of vines chiefly cultivated, are the Pedro Ximenes, and the Doradillo. Both the dry and the sweet wines are made from them, the difference being only in the management. In Mr. Heredia's vineyard, which is situated to the north of Malaga, near the top of the mountain, there are fifteen varieties of vines ; but by far the greater portion consists of the two varieties already mentioned. The system of pruning in the neighbourhood of Malaga has hitherto, Mr. Bryan says, been very bad, it having been the universal practice to leave a spur on every shoot, weak or strong, and no care was

taken to keep them from the ground. Since their house became such extensive proprietors of vines, they have procured men from *Xeres de la Frontera* to prune the vines, according to the system pursued at the latter place; but they find great difficulty in getting their own people to follow the example set. Mr. Bryan pressed me very much to visit with him their vineyard, which they were now pruning, the leaves having fallen, in consequence of the difference of temperature at that elevation, although near Malaga they were still perfectly fresh; he promised to send to Mr. Kirkpatrick an assortment of cuttings of every variety in the vineyard; and on the other hand he requested me to purchase all the publications which have lately appeared in France, on subjects connected with vine-growing, and forward any information which might strike me as being particularly valuable to them. This, he says, may save him the trouble of a trip to France, which he was contemplating.

Mr. Bryan disapproves of the system pursued in Xeres, of leaving a void of one-fifteenth part in each cask, with the bung loose to admit the air. He refers to Dr. Ure's Chemistry as an authority against this practice. It seldom happens, however, that Sherry wines thus exposed turn sour in consequence, although this would inevitably happen with wines of less body.

The farmers in the neighbourhood of Malaga do not, like those of Xeres, hold their wine twelve months before selling it to the merchant. They have earthen vats, of the shape of an urn, and sometimes large enough to contain two or three butts. Into these vats the *must* flows as it is pressed, and as they become full, in order to make room for more, the wine is conveyed from them, more or less fermented, as it may happen, to the stores of the merchant. Their means of conveyance are mules and

asses, the wine being carried in sheepskins ; these skins, from being constantly used, do not, however, give any taste to the wine. No difference seems to be made in price in consequence of any real or supposed difference in quality ; and the culture of the vine, excepting that of the Muscatel for raisins, seems to be a very poor pursuit.

Messrs. Heredia and Co. sent a quantity of wine to America without brandy, and it was much liked, and considered to bear a resemblance to Champagne. I also tasted wine of a year old, which he said resembled what had been sent. It was very deficient in flavour, but promised to be a wine of a good body when older. I also tasted some wine which had been sent to Havannah for the voyage, but it seemed to me to be exceedingly vapid and flavourless. Mr. Bryan complained of the presence of tartaric acid in their wines, which gives it, when new, a harsh taste. It appeared to me that this acid was rather deficient than in excess, and I told him I thought their wines would have more character if fermented with the husks, and perhaps even a part of the stalks. I think their vapid taste, or *fadueur*, to use a French expression, is chiefly owing to the *must* containing only the purest principles of the grape. A more violent fermentation, produced by a larger quantity being fermented in a mass, would, on the other hand, make the wine ripen as early as at present, notwithstanding the addition of these other principles. Indeed, there can be little doubt, that by allowing a large portion of tartaric acid to mingle in the *must* with the husks and stalks, a more perfect fermentation would be much earlier effected.

The best wine in Mr. Heredia's cellars falls far short of a good Sherry. They have not yet adopted the system of having soleras, which are never exhausted. But Mr. Bryan

says, their attention has been so largely devoted to other pursuits, that hitherto they have not paid so much attention to their wines as they will do now that they have embarked so largely in the business.

In the evening I accepted an invitation from an old Irish merchant, who has been settled in Malaga for forty years—Don Juan Langan—to visit his cellars. He has been in the habit of sending choice wines to England and Ireland, and particularly of supplying the cellars of noblemen, and men of great wealth. Although his stock is not very large, he has decidedly the best wines I have tasted in Malaga—that is dry wines. Some of them, he says, are twenty years old and upwards. Some of his wines of seven or eight years old resembled a good Sherry, and he agreed with me in thinking that his sweet wine of that age was equal to those three times as old. He further agreed with me, that the great age of those wines did by no means add proportionably to their quality: and he evidently understands the art of giving the qualities generally attributed to age, by mixing, and other management. He himself hinted at the success with which he had conducted this branch of trade, and he has the reputation of having acquired great wealth.

In the evening I for the last time took leave of my kind and worthy friend Mr. Kirkpatrick, and embarked on board the French schooner, in which I had engaged my passage to Marseilles. I left with Mr. Kirkpatrick the following memorandum;—"A box three feet long, by two feet deep, and two feet wide, will contain nearly 500 cuttings of vines, each the full length of the box. The book called *Conversaciones Malaguenas* contains a list of the varieties cultivated in the neighbourhood of Malaga. Perhaps there are some new varieties which were not known when it was published. About

thirty varieties are there enumerated. This would allow of thirteen or fourteen cuttings of each kind to be sent; but it is not likely that it will be possible to procure cuttings of every kind; there will therefore be room in the box to send a greater quantity of the most valuable; for example, the Muscatel—the Larga, or long grape, which yields the bloom raisins—and the Pedro Ximenes: six or eight cuttings of each would be enough of the less esteemed varieties. It will be observed that there are two kinds of the Muscatel; the smaller may be undervalued in this country, but it may suit our climate better than the other. Mr. Delius mentioned a vine which had produced bunches weighing fifty pounds. Perhaps it would be possible to obtain cuttings of this kind, perhaps of the identical vine. I should not like the little Corinth grape to be forgotten. A cutting should be taken from the lowest part of the shoot, as near to the stock as possible, the top part of the branch being cut away. Those are best which contain the greatest number of knots or buds; a string to be tied round each variety, and a small piece of wood tied to the string numbered, so as to correspond with the number in the list and description.

“ Besides the name in the book, and colour of the grape, it would be desirable that the name most commonly given in the country should be stated; also whether it is most esteemed for raisins or for wine—whether used for sweet or dry wines—whether a great bearer or otherwise—whether it ripens early or late—whether cultivated in the vineyards, or the gardens, and any other particulars which may distinguish it. The cuttings will pack better if procured as straight as possible. Should it be found that there is not room to send six or eight cuttings of the least esteemed varieties, let the number be diminished to four or five; but, under any circumstances, I should not like

fewer than from twenty to thirty each of the Muscatel, Bloom, and Pedro Ximenes.

“The interstices formed by the cuttings to be filled up with sand and very dry soil. Two boxes of the above description to be prepared, one to be sent by the first vessel which sails after the vines can be cut with safety, which undoubtedly may be done about the 1st of December, the duplicate by the next vessel that may follow, both addressed to Messrs. Walker, London, who will pay all expenses which may have been incurred up to the arrival of the boxes in London, and will send them to New South Wales by different ships, and by the earliest opportunities. Perhaps, in addition to the above, Mr. Kirkpatrick will take the trouble to procure a quantity, say a gallon, of the freshest *Royal Dates* of Barbary; also a few of the common varieties, and a gallon of Jordan almonds, and send them in a box to the same address. Also in the same box a few seeds of the very fine onion, which is so abundant in Malaga, and of any esteemed kind of melons, or any other fruit or vegetable grown from seed which may be considered worth attention. After my arrival in London I shall ascertain what are the best seasons and modes of sending plants of the Spanish chesnut and Jordan almond, and I will take the liberty to write Mr. Kirkpatrick upon the subject, satisfied, as I cannot but feel, that he will esteem it rather a pleasure than a trouble to contribute to the advancement of a colony containing so large a proportion of his countrymen as New South Wales.”

During my stay in Malaga I also wrote to my friend Dr. Wilson a letter, which contained the following observations and queries relative to Sherry wines:—

—— “I have been thinking a good deal about the

Sherry wines, and there are some points on which I have not been able to satisfy myself. You know we no sooner had the practice of returning the scum upon the wine, by means of a funnel, pointed out to us by Mr. Domecq, than we condemned it. It has occurred to me, that after all, it may in most cases be the best thing they could do. It is the saccharine principle that is undoubtedly most abundant in the grapes of these climates, and the imperfect fermentation which takes place in a butt, may require to be carried forward by the addition of the yeast, which, were it not for the funnel, would escape. I think Cormack used the expression, that it was to feed the wine that the scum was returned; in this I have no doubt he was correct. On the other hand, it seems to be agreed that a good deal of the Sherry, even of the albarizas, turns sour. This might undoubtedly be prevented by a contrary arrangement to the above. I think Domecq said, that sometimes 100 butts of the Machar Nudo wine would turn sour in one season. I wish you would ask him whether there has been an instance of any of his wine turning sour since he adopted the practice of allowing the scum to escape. Perhaps there are particular kinds of grapes in the vineyard which yield a wine without body. Perhaps particular parts of the soil do not bring the grapes to perfection. You will see from Chaptal what a difference there frequently exists in France in the value of the produce of two sides of the same hill. It was a question I always forgot, or neglected to put at Xeres, whether the difference of exposure was found to affect the quality of the wine. I suspect all these things have been overlooked.

“ When I saw the state of the grapes which Domecq was pressing, and which seemed, in fact, no worse than

others we saw in all directions, I thought it was easy to account for the scuddiness which so generally attacks Sherry wines. Cassabon's overseer, however, afterwards showed us, that however broken or rotten in appearance, the grapes were by no means in reality decayed. This shook my faith in scuddiness being the result of the employment of decayed grapes. On the whole, I think if a more perfect fermentation were effected in the first instance, little scuddiness would ever afterwards be found in the wine. I think you will find in Chaptal, that the *graisse*, which I take to be the same thing, most frequently shows itself in wines which have undergone little fermentation; that is, where, in order to preserve the *bouquet*, the fermentation is stopped. He says elsewhere also, that it had been usual at Orleans to ferment the *must* with stalks and skins and all. At one time, however, they thought of relieving their wine of a degree of harshness, by not suffering the stalks to be fermented, but it was found that the wine was much more subject to *graisse*, and they returned to their old practice. He says, that in various parts of France they deprive the grapes, i. e. the *must*, more or less of the stalks, according as the season has been favourable or otherwise for maturing the grapes. In a very fine season they leave all the stalks, considering it necessary to produce a perfect fermentation. In no part of Spain, as far as I can find, do they ferment even the skins of the grapes*. Were I concerned in the business, I should certainly attach much importance to, and expect important results from, a trial of the system of large vats, and the fermentation of the skins, in order at once to effect a thorough fermentation. In most cases I

* The red wines of Catalonia, and of other provinces which produce red wine, are of course an exception to this observation, as it is necessary to ferment the skins in order to give the wine a colour.

think you would have an Amontillado ; that is, if you allowed the grapes to be as ripe as they are allowed to be at present, dried them in the sun, and assisted their natural dryness still further by adding gypsum. (By the bye, may the gypsum not contribute, by absorbing the existing acid, to produce scuddyness?) But if, as is the practice at San Lucar, you make the vintage before all the grapes should attain the perfect ripeness they do at present, and were less particular in depriving them of moisture, then I think you would have a wine something between the Manzanilla and the Amontillado ; not so dry as the latter, but adding much of the mellowness and richness of Sherry to the lightness of the Manzanilla. The latter is, in fact, the natural wine of the country on the ordinary soils. If the produce of the albarizas were treated in the same manner, you would have a wine of the same character, but probably surpassing it in quality as much as the real wines of the Chateau Margaux and Haut Brion surpass the ordinary growths of Claret. Add to this what I cannot but think would be a certain, and to the merchant the most important, result, you would have a wine as ripe in eighteen months as it now is in three or four years. There are two or three other little points, about which I should like to inquire. Domecq said, a number of his grapes had rotted this year, in consequence of the wet weather and luxuriant vegetation. This he would prevent in similar seasons in future, by stripping off the leaves to give the grapes sun and air. Pray is this practice not generally known in the country? In the south of France it is a regular part of the labours of the vineyard, unless in remarkably dry seasons. Another query is, do they never take the top off the branch after the grapes are formed?—I should like to know Pedro Domecq's ideas about the agua pies. In many seasons,

Cormack says, the agua pies is better than the first pressing,—now this can only be owing to the over-ripeness of the grape—to its containing too much saccharine matter in proportion to its moisture. Would it not be better to make the vintage earlier? and, instead of adding foreign moisture, you would then have enough of the natural juice of the fruit, and enough also of saccharine matter, seeing its excess is the most general fault. But this would not suit the hot mouths of your English customers. If you have an opportunity, give me some particulars of the relative value of the albarizas and arenas. I am confident Cormack must be mistaken. I think it is barely possible but that the albarizas must be double, if not treble, the value of the others.”

Thursday, 10th November.—After encountering a succession of contrary winds and calms, we this day came to an anchor in the bay of Rosas, in Catalonia, the north wind blowing so strongly out of the Gulf of Lyons, that it was impossible to double Cape Creux. I was now on the verge of one of the most interesting wine countries in France, and was glad of this opportunity of quitting the vessel before her arrival at her destination. But on touching the beach we were informed that we must be put under quarantine, owing to a report that the yellow fever had broken out at Gibraltar.

Rosas, like most of the other towns I have seen on the east coast of Spain, is backed by steep hills, which are clothed with vines and olives to the very tops. In the distance are the Pyrenees, capped with snow. If one might judge from the state of these hills, contrasted with that of the rich plains of Andalusia, we might draw the conclusion, that wherever nature had been bountiful, man had been indolent; but where she had been niggardly in her

gifts, the deficiency had been more than compensated by the industry of man. The hills above Rosas, as well as those in the south, exhibit everywhere an appearance of the most careful cultivation, and, in general, are covered with habitations, while it was rare that a detached house was met with for many miles on the plains.

Friday, 11th November.—On paying a small fee to the health officer, I was permitted, under his guardianship, to walk to one of the neighbouring hills. The soil consisted of nothing else than the rough *debris* of the granite of which they are composed. Towards the bottom of the hills the vines were planted in double rows, three feet apart, with a space between of thrice that width, which had just been ploughed for a grain crop. Higher up, the ground is entirely covered with vines and olives, planted with regularity wherever the ground permits; but, on ascending higher, advantage has been taken of every spot where it was possible to thrust a plant among the rocks. These vines have been planted with great labour, as there is scarcely soil enough to cover their roots; and terraces have been formed by small walls of dry stone, to prevent the little there is from being washed away. The vines were all pruned down to one or two knots on each mother branch, and each vine had from three to six or seven shoots, in proportion to their strength. Those among the rocks were in general very stunted, and must bear a very small crop. The olives, which they were now employed in gathering, were a small black variety, and I could not observe that they had suffered in the same manner as the olives of Andalusia.

Monday, 14th November.—Having yesterday been permitted to land, I spent last night in the Posada,

at Rosas, and proceeded this morning to Figueras, in order to join the diligence, which passes to-morrow morning for Perpignan.—This country, though far from being naturally so rich, is in a much higher state of cultivation, and proportionally more productive than the south. Passing through the town I observed them carrying out from a cellar the refuse of a fermenting vat, and on entering I found they had just been pressing the skins, which had fermented with the wine.—Outside the cellar were two presses, each on wheels. These were composed of a box $2\frac{1}{2}$ feet long, and about the same width and depth, formed by light bars, with stronger bars at the corners. Before and behind these boxes was a screw, and there was a spout to convey to a vessel, placed below, the *must* which would flow through the bars to the bottom on the pressure being applied. It was evident that these were *itinerant* presses, which the proprietor was accustomed to send to the different vineyards as they were required. I found also that he had a more powerful press within the cellar, and that there also was a mill for grinding olives, much superior to the one I had seen at the Marquis del Arco Hermoso's. The *basin* of the mill consisted of an immense piece of granite formed into a circle, and hollowed out in a sloping direction, leaving a space level at the bottom considerably greater than was required for the vertical stone to turn upon, as upon a pivot; and attached to the vertical stone was a sort of scoop, which collected the scattered olives into the line which it passed over.

Tuesday, 15th November.—This morning at 9 o'clock I took my seat in the *coupé* of the diligence, for Perpignan. I found here an Englishman who was returning from an excursion to Madrid and Barcelona. The road

passed through a valley in the direction of the Pyrenees, the soil everywhere cultivated like a garden. Here were immense numbers of olive trees of a very large size, underneath which grain crops are cultivated. Some of the wheat has almost covered the ground, but in general it is just making its appearance, and in many places the plough is still at work. On the hills the vines are cultivated in terraces, and not a spot is left unoccupied. Adjoining the road over the Pyrenees are everywhere to be seen the marks of the greatest industry—not a spot which is capable of cultivation is left untouched, and the mountain scenery is sometimes beautifully diversified by dwellings surrounded with trees of every kind, and enlivened by the verdure with which the mountain stream has covered its banks. The hills themselves are entirely destitute of herbage. After passing the town of La Jonquiere on the French side, the ground (although evidently of a very meagre quality) appeared generally cultivated with vines and corn. The vines appeared everywhere to be cultivated with great care. I remarked some new plantations; and, in one instance, a plantation of the preceding year had made so little progress that I could scarcely persuade myself the vines were not the cuttings of the present year newly planted, with some of the leaves still remaining upon them. On questioning the postilion as to this point, he said that the plantation *had two years*, but the ground here was so very arid the vines made little progress.

Wednesday, 16th November.—Having called at the banking-house of Messrs. Durand, who are agents for Herries, Farquhar, and Co.'s notes, I took occasion to mention to one of these gentlemen the object with which I was travelling, and to ask his advice as to the best

mode of seeing the vineyards near Perpignan. He said I could not have inquired of persons more competent to give me information; that they had considerable agricultural establishments in the neighbourhood, and if I and my friend (the gentleman with whom I had travelled from Figueras) would accompany them the next day, they would be glad to give us every information in their power. After accepting this very liberal offer, with due expressions of thankfulness, I mentioned that I had heard of their eminence as agriculturists, and had I gone to Marseilles in the first instance, I intended to have procured an introduction to them. He replied that it was unnecessary; that if we were agriculturists we were their friends—that all agriculturists were their friends. It was accordingly arranged that we should accompany them the next morning in their carriage.

Thursday, 17th November.—Mr. Durand having recommended our starting at six in the morning as the days were short, and we had more than one place to visit, we proceeded to their house at day-break. Both the brothers accompanied us. When we got clear of the walls of Perpignan, it was sufficiently light to enable us to make some observations as we passed. The olive is cultivated to a great extent on all sides. Mr. Durand knows only one variety, a large black sort, not so large as the la Reyna of Seville, but about as large as the largest of the other sorts cultivated there. Here, as elsewhere, the olive has this season been attacked by a worm, but it is attributed rather to a deficiency than an excess of rain. The rain has this season been below the average in this district, and the country has suffered a good deal in consequence. The average annual produce of olive trees throughout the country is from 15 to 20 pounds of oil,

but there is every possible variety. A very fine olive, in a favourable year, will sometimes yield as much as 80 pounds. Such a misfortune as has happened this season is of rare occurrence. In planting they take a sucker from the root of an old tree, and keep it three years in a nursery; it is then transplanted, and in three years more it begins to give a few olives. In ten years it has become a largish tree, but requires many more years before it acquire all the magnitude it is capable of reaching. Many of the olives we passed had the greatest possible appearance of old age. They were so old, Mr. Durand said, that no one had any knowledge of their age. In general, the ground underneath was cultivated with grain crops; the trees are benefited by the manure, and the crop suffers only partially from the shade. We saw, however, some very fine trees planted from 30 to 35 feet apart, which overshadowed the ground so much, that grain crops could not be cultivated under them with advantage.

After a drive of about an hour and a quarter, we arrived at the first of Messrs. Durand's establishments. This is an immense square inclosure, with high walls and buildings. It formerly belonged to the Knights Templars. The church is converted to a wine-cellar, and the houses of the Templars to the residences of Messrs. Durand's peasants. Several other buildings are also erected within the walls, forming altogether a most complete and extensive homestead. After taking chocolate we proceeded to the vineyards. Mr. Durand only cultivates three varieties of vines, the Grenache, which gives sweetness, the Carignan, which gives colour, and the Mataro, which gives quantity. His vines are in general planted either on the plain, or on a gently inclined slope; but when there is a

slope the exposure is always to the south. The soil is loose and stony, the stones *quartz*, of various colours and shades.

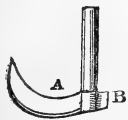
The stony and least fertile portions of the estate are selected for vines. Some of the corn fields are planted at wide intervals with olive trees, but there are none of these among the vines. The distance at which the vines are planted is always four feet, and the *quincunx* is preserved with the greatest possible exactness. The ground is ploughed twice a year; that is, immediately after the pruning, which is now going on, and in spring, after the vines have given shoots of eight or ten inches in length. On both occasions it is first ploughed in one direction, and then cross-ploughed. It receives no other labours during the year, and in summer, such is the strength of vegetation generally among the vines, that few weeds make their appearance, the ground being almost covered with the vine shoots. I was much surprised on finding that, with the exception of one field, the only preparation the ground had received previous to having been planted was a common ploughing. The cuttings were then put down in holes made by an iron bar or dibble, and left to shift for themselves. Many of them, as might be expected under such treatment, never came forward, and it requires six years before the vineyard is so well established as to yield a crop.

On learning this I had no difficulty in accounting for the small progress of the vines I had seen before arriving at Perpignan. There was a plantation of the Muscat of Frontignan, which was now six years old, but in much greater vigour, and with a much greater number of shoots on the vines than was usual. Having remarked this, Mr. Durand informed me, that in planting this field he had

caused a hole to be dug for each plant 18 inches deep, by 18 inches long, and 12 wide, and had laid the cuttings horizontally into this trench, bending up the extremity where the plant was to grow. This, he said, accounted for the greater number of shoots from the greater quantity of roots. The produce, he said, was double what the ordinary vineyards yielded. The stocks are all extremely low, not more, in general, than six inches from the ground; but so well has the pruning been managed, that all the shoots are nearly vertical—stakes or props are thus quite unnecessary, and are never used. Indeed, their use seems to be quite unknown throughout this district. The number of the buds or knots left in pruning was from three to six, according to the strength of the plant. They are universally pruned in the spur fashion. Having mentioned the system of alternate long and spur shoots, Mr. Durand's steward, who seemed to be a very respectable and well-informed man, said that it would sooner wear out the plants. I told him of the precaution Mr. Domecq, of Xeres, intended to adopt in order to prevent the attacks of worms. He said, that however close the branch might be pruned, there was no danger of these worms finding their way to the heart of the stock unless the stock itself were bruised or broken. It was, he said, by wounds or splits in the stock itself that the worms found access to it, and not by close pruning of the new wood. In this opinion I perfectly coincide with him. There are no worms in any of their vines, which are, indeed, all in the highest possible order.

The average produce of these vines is six barriques (hogsheads) per hectare; this is about 140 gallons per English acre; a much smaller produce than I would have expected from the general health and vigour of the vines,

although it still continues a matter of surprise that they should produce at all, considering the great hardness of the subsoil, and the slight hold of it which is originally given them. Part of the vineyard had already been pruned, and two men were busy in a part which we visited. There had been fourteen men employed the day before ; but this was the *fête* day of the neighbouring village, and only two of the men had come. It requires a man ten days to prune a hectare. The instrument which they use is contrived to give, in some degree, the purchase of a lever.



With the edge A they cut with great care the shoots where a bud is left for the following season ; but the superfluous shoots are chopped off with the blunt edge B with very little ceremony. I took this opportunity to request that Mr. Durand would give me a parcel of cuttings of all the kinds of vines he possessed ; and he immediately gave orders to his steward accordingly.

Between twelve and one o'clock we returned to the house, and after a substantial *dejeuner à la fourchette*, visited the wine-cellar. Along the wall, on each side of the cellar, are arranged a number of large vats, containing from thirty to fifty barriques—that is, from 1800 to 3000 gallons each ; the whole number was fourteen or sixteen. They were placed horizontally, with one end to the wall. Above them, on each side, is a floor or platform, which is on a level with a door that opens to the cellar from a higher side ; by this door the grapes are brought in. On the platform are several troughs, about 10 feet long, by $2\frac{1}{2}$ feet wide, with the side sloping inwards. Above the bottom of the trough there is a false bottom, perforated with holes, and divided by open spaces, which allow the liquid to pass to the true bottom, whence it flows, by a

spout at one end, into an aperture of about a foot square in the upper side of the vat underneath. While the men are treading the grapes in these troughs, they take out a portion of the stalks by means of a three-pronged stick, and after the grapes are pretty well broken, the whole contents of the trough are emptied into the vat. In the vat it is left to ferment, from eighteen to twenty-four days, according to circumstances, and at the end of that period, the wine is drawn off to another vat, by means of a siphon and a pump. The *marc*, or skins and grounds, are then removed to the press, and the wine extracted from them is kept apart as being of inferior quality. In the end of each vat there is an aperture sufficiently large for a man to enter and clean it out. This is strongly secured by means of copper screws. After having been removed to a clean vat, the wine is kept in it till the following spring, when it is again drawn off the lees. When twelve months old, it is sent to Port Vendre, where Mr. Durand has very extensive stores and cellars; it is there mixed with 10 per cent. of brandy, and shipped for Paris. This is the ordinary description of Rousillon* wine, *of the plain*; but being made with more care than that of the smaller proprietors, it is the best of its kind. The wine of the hills is of a better quality.

Exclusive of the ploughing, which is done by their permanent servants, the management of the vines costs about thirty francs a hectare. The ploughing and the vintage may cost fifteen francs more—being, in all, about 16s. an English acre. The value of the produce is from 15 to 18 francs a *charge* of 26 English gallons; or from

* Roussillon is the old name of the province which is now called "Pyrenees Orientales."

180 to 216 francs per hectare—that is, from £3 4s. to £4 16s. per English acre.

After having walked into the garden, which was well stocked with fruit trees, we proceeded to the other property which Messrs. Durand proposed we should visit. This was entirely an irrigated farm. It consists of 240 hectares, 562 acres, and every acre of it can be laid under water when irrigation is required. This farm supports between 1,000 and 1,100 sheep, 114 head of cattle, and about a dozen horses, and there is always less than two-fifths of the land in pasture or green crops. The lucerne is cut five times in the season, and twice eaten down. The soil is a fine friable mould. In a field, where five ploughs were at work, it turned up in the finest possible condition. They were ploughing *in* wheat. Part of the field was manured, and part had been manured the preceding season. Messrs. Durand have an excellent breed of cattle. The working oxen as fine almost as any I have ever seen, although I have seen larger. In all the qualifications of depth and breadth of carcase, they were nearly perfect, with the line of the back perfectly straight, and the tail well set on. They were yoked with bows and yokes, the bows made of wood, which seemed to answer very well. The ploughs and carts were of the same construction as those generally in use in the country. The ploughman drove his pair of oxen with a goad fixed to the end of a long pole; on the other end of which was the small spade for cleaning the plough. They seemed to make excellent work, notwithstanding the rudeness of the plough.

The buildings on this farm were very extensive, and though old, are now undergoing a thorough repair, which will leave them in excellent condition when completed.

The stables and sheep-houses are very spacious, as both cattle and sheep are housed every night. The lambs are always kept in the house, and the ewes are brought home to them three times a day. The lambs appeared all of the same size, and must all have been dropped within two or three days of each other. The wool was not of a quality that would be reckoned fine in New South Wales; and yet, Mr. Durand says, there is nothing finer in this part of the country. At the rate wools were selling in August this year (1831), it would bring, in London, about 18*d.* a pound. It is at present only worth about 7½*d.* here, though two years ago it sold for 20*d.* A good wether will bring 10*s.* or 12*s.* They do not milk the cows, but allow the calves to suck them. There is no such thing known in this country as a dairy farm. Oil is the almost universal substitute for every purpose to which butter is applied with us, and milk is seldom or never used. There are, perhaps, few prejudices stronger than that of the English against the general use of oil, which they are accustomed to consider as a very gross kind of condiment; and perhaps there is no prejudice more unfounded. For surely the pure vegetable juice of the olive is far from being inferior, in delicacy, to butter, the animal fat of the cow; and there can be no doubt, that oil is also more wholesome and congenial to the human constitution, in a hot climate, than the latter. This district is not celebrated for the quality of its oil, but they do not, as in Spain, consider rancidity a merit; and in the hotels it is furnished of very good quality, while the olives are quite delicious. Mr. Durand's working oxen are fed during the winter on hay of excellent quality, and are all in the highest condition. They have also potatoes, and sometimes turnips

in winter. One set is worked from morning till noon, another set from noon till evening. I neglected to inquire what the average produce of wheat is on this farm; but on the farm first visited, where there was no irrigation, it was sixteen or seventeen bushels per English acre. The workmen are paid extremely well. The permanent servants of the farm have 150 francs, about £6 a year, in money; 6 hectolitres ($21\frac{1}{2}$ English bushels) of wheat; 500 litres (120 gallons) of wine; 40 pounds of oil, and 20 pounds of salt, besides a piece of ground to plant vegetables and *haricots* (the great dependence of the working people here), and house room about the premises. The peasants, and their wives and children are all extremely well clothed. Day labourers, at all seasons, receive 30 sous, about 14*d.* a day. In the harvest, mowers and sheep-shearers, $2\frac{1}{2}$ francs, and reapers two francs per day, besides their food; and Mr. Durand says, they make six meals a day at that time, and the quantity of food they consume is almost incredible. About sunset we reached Perpignan, from which the last farm was three leagues distant, highly gratified with our excursion, and the kindness of our entertainers, who, to wind up their attentions for the day, had invited us to dine, and we now found a sumptuous dinner waiting our arrival.

Friday, 18th.—Messrs. Durand had been kind enough to say that they would give me a letter to their manager at Port Vendre, where they have a large establishment for shipping wines. I waited upon them to-day, and found it ready. Port Vendre is only about half a league from Collioure, which I had resolved to visit, as its environs produce the first quality of Rousillon red wine. At two o'clock I accordingly took my place in the diligence,

and arrived at about seven at Collioure, where I stopped for the night. From Perpignan in this direction (south-east) the soil is richer than I have elsewhere observed it in the neighbourhood of Perpignan. Though there is here and there a vineyard, the land is generally under corn or meadow. Two or three miles before reaching Collioure the country begins to ascend towards the Pyrenees, on the tops of which, bordering the ocean, are still to be seen some towers built by the Moors when masters of this part of the country. No sooner do the hills begin to rise than the cultivation of the vine begins also, and the first ranges of the mountains are covered with it to their very tops.

Saturday, 19th.—After breakfast this morning I walked over to Port Vendre, and waited upon Mr. Mas, the agent of Messrs. Durand. The road from Collioure winds from hill to hill along the shore. The hills are exactly similar in form and structure to those of Malaga: a shale or schist, with a slaty gravel, plentifully mixed through the soil. Mr. Mas conducted me over the hills in the neighbourhood of the town, which are planted with great regularity and beauty in terraces from 6 to 18 feet wide, according to the slope of the hill. The terraces are made to follow the different curves taken by the hills, and are divided by channels to allow of the passage of the water. It is a stated part of the labour to carry up the soil from the lower part of the terrace, where it has been stopped by the small stone walls, to the higher part.

In planting these hills they break up the ground only to the depth of eight or nine inches, and as they take out a great number of stones, the depth of the soil remaining is not more than six inches. They then bore a hole in the

loose rock with a bar of iron, and thrust in the plant to the depth of 12 or 15 inches. I saw a plantation of the preceding year where almost every plant had succeeded, although none of them had given shoots of more than six or eight inches. Mr. Mas says it was formerly the practice in this country to trench and break up the rock to the depth of two or three feet, but (strange to say) they found the vines were sooner worn out, and they now follow the less expensive method. A *hectare* of middle aged vines is here worth 1,000 francs. The greatest expense is in the first plantation, for it is universally necessary to build a series of terraces to support the soil. The value of a hectare with a good exposure, before planting, is 500 francs. There is, however, little ground in this neighbourhood remaining to be planted, although the greatest portion has been brought into cultivation within the last 15 or 20 years. The average produce, according to Mr. Mas, does not exceed six charges the hectare, which is just the half of the vines of the plain. The annual expense of cultivation, including the vintage, is 40 francs, but the wine is worth 28 to 30 francs a charge, or from 168 to 180 francs the hectare. The distance of the plants is from three to four feet, and the pruning is in every respect similar to that of the vines of the plain. The varieties chiefly cultivated are the Grenache and the Carignan. The vines are never manured. The wine sometimes remains in the fermenting vat so long as 30 days. Like the wine of the plain, it is seldom drank in its pure state, but is sent to Paris, with an addition of from $7\frac{1}{2}$ to 10 per cent. of brandy, in order to be mixed with the lighter wines of Burgundy and Orleans, to give them strength and colour. The mixture of the brandy has, they say, a double purpose. It enables them to ship

the wines when 14 or 15 months old, without risk of their turning sour, which could not be done for twelve months more without the admixture ; and it enables the Parisians to mix a portion of water in order to reduce the wine in strength, and thus to save a part of the municipal duty which is levied on wines entering Paris. The latter is, I think, the only valid argument. Being desirous of procuring some of the wine of Collioure, Mr. Mas sent a person with me whom he was accustomed to employ in such matters, and after completing my purchase, I went with the proprietor to the vineyard where it was produced, and obtained four varieties of grapes which were not in Mr. Durand's vineyards. This vineyard was on the side of a very steep hill, and appeared to have been planted with great labour ; the terraces did not exceed from eight to ten feet in width, and the walls were from two to three feet in height. He said the annual average from 500 plants was about two charges of wine. This, according to the distance they were planted, was rather more than double the quantity stated by Mr. Mas ; but it was probably only a guess, although I am inclined to think the estimate of the latter was under the truth. There was, however, no way of coming nearer the true state of the case, for he knew neither the extent of the hectare, nor of the arpent. The wine of Cosperon, which is celebrated as a *Vin de Liqueur*, is the produce of a farm which was pointed out to me by Mr. Mas, under one of the hills which we passed over. It is, according to his account, nothing more than a mixture of brandy with the unfermented juice of the grape. After the grapes (of the Grenache kind) are very ripe, they are gathered and allowed to dry a few days in the sun ; they are then pressed, and the juice is put into a cask, where it is mixed with a

large portion, Mr. Mas thinks from a third to a half of its own bulk, of brandy. The brandy prevents the fermentation, the liquor retains the sweetness and flavour of the fruit, and this is the *Vin de Liqueur* of Cosperon, which has acquired a great name in the south of France.

Monday, 21st November.—Having returned early yesterday morning from Collioure to Perpignan, I found the Messrs. Durand had sent to my hotel 9 bundles, containing 50 each, of nine distinct varieties of vines, and on visiting them at their house, I was again pressed to dine with them, but on this occasion excused myself. The kindness and attention of these gentlemen to me, a perfect stranger, without the slightest claim to their notice, is worthy of remark. They are the sons of Mr. Durand, the Deputy for the Province, and are now managing his affairs in his absence. Their mercantile as well as their agricultural concerns are of great magnitude. The latter they informed me yielded only about 5 per cent. upon the money invested, but they made no allowance for the value of the improvements, which were very extensive. Besides the properties I visited with them, the one consisting of 700, and the other of 560 acres, they had two other estates in the neighbourhood of Perpignan, and all in their own hands. The irrigated land is worth 1500 francs, about 60*l.* per hectare, the vineyards not more in general than one-third of that sum; but that proportion was, I believe, intended to represent the value of the land before planting. On one of the estates there is a handsome mansion, with extensive gardens, and a green-house. I was happy to promise that I would, in return for their attention to me, contribute to stock the latter by sending a packet of Botany Bay seeds, a present which I was

glad to find would be highly agreeable to one of the brothers, who has a taste for horticulture and botany.

After having engaged my place in the diligence for Montpellier (which was to start at seven in the evening), I procured a guide, and proceeded to visit Rivesaltes, which is famous for producing the first sweet wine of France. Rivesaltes is a town containing about 3000 inhabitants, situated in the middle of an irrigated plain, about four miles from Perpignan. The vineyards are on the extremities of the plain, where there is a dry granitic soil; and on that portion which separates the meadow land of Perpignan from those of Rivesaltes, it is so thickly covered with stones of various coloured quartz as to make it difficult to tread upon it. In many places where the vines appear to grow with great vigour, and to have attained a great age, the soil is of such a nature as would with us be considered absolutely sterile. They were very generally engaged in the vineyards in pruning and hoeing. The pruning was here, as elsewhere, universally in the spur fashion; from 3 to 7 or 8 knots being left on each vine, according to its strength. The stocks were in general close to the ground, and, indeed, where the soil was newly dug up, and gathered up into the form of a small ridge between the rows of plants, they scarcely seemed to be upon a level with it. I examined a plantation of young vines which had been planted last year, and found that more than one-half the number had failed. Here also they never think of trenching the soil before planting; but after hoeing it the ordinary depth, they make a hole with an iron dibble and thrust in the plant. As they never afterwards take the trouble to water them, it is not surprising that in so dry a soil so large a propor-

tion of the cuttings should never take root. At Rivesaltes, for the first time in France, I observed them manuring their vines with strong stable dung, and I was informed that this was the usual practice here, although Messrs. Durand never used manure to their vines. The Muscat is the grape commonly cultivated, and by visiting different parties who were engaged in pruning, I obtained a few cuttings of this, and three other sorts; two of these four were entirely new to me—of two of them I had procured two or three cuttings each at Collioure.

The Muscat wine of Rivesaltes is made in the following manner:—The grapes are allowed to hang upon the vines till they are so ripe that they begin to shrivel; they are then cut and left on the ground under the vines where they grew, for eight or ten days, unless the weather should prove unfavourable, after which they are pressed, and the juice is put into a cask, leaving the bung out; about a month after this, it is drawn off to a fresh cask, which is prepared by burning a match, not of sulphur, but of strong brown paper, steeped in the strongest brandy. They use this, they say, because the sulphur tastes the wine. The Muscat wine of Rivesaltes sometimes brings the proprietor 300 francs the charge of 118 litres (bottles), when it is only from one to two years old. The produce of the vineyards of Rivesaltes was stated by the small proprietors, from whom I obtained the cuttings, to be about two charges for every 500 stocks, exactly the same as was stated by the person from whom I bought the wine at Collioure. I consider them both, however, as a very wide guess, for it was evident neither of them had been accustomed to reckon the produce in this way, and they neither knew the extent of the hectare, nor of the arpent. Many of the vines here seemed to require

renewal, I would have been inclined to say owing to the quality of the soil, had I not seen the excellent condition in which Messrs. Durand's vines were kept in soil, which was in some places not less stony and arid.

In filling a vacant space, when they cannot find a shoot on any of the neighbouring vines long enough to reach the spot, they take the longest shoot there is, and lay it in a circular form round its own stock; the following year they raise it, when, with the shoot it has produced, they can not only reach the spot to be filled, but have by this means a strong plant to fill it.

While noting above the use of a match with brandy instead of sulphur, there has occurred to my memory an observation stated by Mr. Mas, in reply to my question, whether they did not find the burning of sulphur in the cask to taste the wine? He stated that when this occurred it must be owing to a small quantity of water having been left in the cask when cleaned. When this was the case, the wine, he said, was sure to be tasted, because the sulphuric acid impregnated the water; but when every drop of water was carefully drained off before the cask was smoked, it never occurred.

I returned to Perpignan about four o'clock, and began to ticket the different bundles of vines, taking only 25 of each of the varieties sent by Mr. Durand, on account of their great bulk. This, and other little matters which required arrangement, occupied me so fully, that I forgot to send for my passport till it was too late to procure it for the diligence that night.

Tuesday, 22nd November.—My delay for another day in Perpignan allowed me to visit the *Bergerie Royale*, where the government keep a flock of Merino sheep for the improvement of the flocks of the district. As Mr.

Durand had assured me that it was not worth my attention, I had given up thoughts of visiting this establishment previously, but on now applying to my landlord for a horse, he told me that before arriving at the Bergerie, I would come to the Royal *Haras*, or depot of stallions for the south. At less than a league from Perpignan, I accordingly came to the house and offices which had been described to me as this depot, and on riding into the yard, I was conducted by a groom to the stable. There are here 31 horses, kept by the government for the purpose of improving the breed in this part of France. They are chiefly cross-bred, and I remarked several very beautiful animals which were a cross between the Arab and the Limousin. There was a small dark brown Arab from St. John d'Acre, and next to him a thorough-bred Arab, produced in France. The latter was incomparably the finer animal, in many points resembling old *Model*, of New South Wales, but I think inferior to him. There was also the *Jennet* of Andalusia, and a number of Flemish horses, both pure and crossed with various other breeds. The Russian and Polish breeds had also their representatives on this side of the stable. On the other side were the breeds of Normandy, and an immense animal from Mecklenburgh, for improving, as they said, the working breeds. Of this kind there were three huge horses, which appeared to me ill proportioned to such a degree as to be almost monstrous. Further on was a splendid English racer, though with more bone and muscle than the horses bred for the turf usually possess. This horse stood higher than any other horse in the collection; he is named *Rembrandt*, and was purchased by the French government from lord Seymour, at Paris, where he had distinguished himself upon the turf, and

had been the winner of large sums. There was also an English horse of the little *Cob* breed, and between these stood some very fine saddle horses of the pure breed (I think) of Limousin. The charge made by the French government for the service of any of these horses is only six francs for each mare. They travel to the distance of from 30 to 40 leagues, and find their chief employment in the department of Arriege. Here there are few horses bred, the work being chiefly performed by oxen and mules, and the ass still maintaining its ground, though not to such an extent as beyond the Pyrenees. The services of each horse are limited to 45 mares, but notwithstanding the extreme cheapness of the charge, and the extensive district over which they travel, scarcely one of the horses covers this number during the season. The horses are fed at all seasons with meadow hay and ground barley. From the terrace behind the stables there is a rich view of the plain to the north of Perpignan, terminated on two sides by the Basses Pyrennees, and on the third by the sea. It is said there is here an extent of land, 10 leagues in length by six in breadth, all of which can be regularly irrigated by means of small canals and water courses, which are cut in every direction. The distribution of the water is regulated by law. The old chateau of Rousillon, with its round tower, overlooks this beautiful plain. The habitations are still, for the most part, congregated in small towns and villages, but here and there a detached house is to be seen. The plain is covered with trees, which border the water courses in every direction. Among these the Lombardy poplar, only now assuming the tints of autumn, is conspicuous. Every field is separated by a row of trees, chiefly the willow. These, however, on a nearer approach, lose much of their

beauty from the practice of cutting them down every third year for fuel, leaving only the trunk about 10 feet in height, with the stumps of the branches to produce fresh shoots.

The plain of Perpignan offers as strong a contrast as possible to the (naturally) much richer plains of Andalusia. Much may be owing to the difference of climate, and the greater facilities for irrigation; but much more is owing to the difference in the political institutions of the respective countries. The absurd law of Spain, which prevents the enclosure of corn or meadow land, strikes at the root of all agricultural improvement.

On arriving at the bergerie, which is a shabby-looking cluster of old houses in bad repair, I was informed that the sheep were out at pasture, and on following the directions given me I soon came up with them. There are 160 rams, and about 300 females. Their wool is certainly much finer than any I had seen at Mr. Durand's, but still there are few of our sheepholders in New South Wales who could not show finer sheep in their flocks than the generality of them. The government make an annual sale of these sheep. The *minimum* price for the rams is 60, and for the ewes 40 francs. A very few of those offered sometimes go off at much higher prices, but the demand is not nearly sufficient to take off those that are disposable at the minimum price. I saw amongst them a Saxon ram, which had cost the government 600 francs. Running with the rams were a male and two females of the goats of Cashmere; the male was a very large animal, with long white hair; the females under the size of an ordinary goat, but they were both very young, the one being 18 and the other only 7 months old. They breed

when under 12 months, the youngest of the two being expected to produce a kid in four months. After they are three years old, the shepherd said (if I understood him right, which was no easy matter, from his Catalan dialect), that they produce four kids annually. The fine Cashmere wool is produced under the hair, and is combed out in the month of May. The large male, they said, yielded from five to six ounces, and the females only two ounces a piece. The government, the shepherd informed me, possess 150 of these animals, which were formerly all here, but, with the exception of the three which I saw, they were removed to the interior.—They were brought from Persia by a gentleman of Paris, who started with a flock of 1,600, only 150 of which he succeeded in bringing to France. They were purchased by the government at the price of 3,000 francs a head, and their produce were for some time offered for sale in this department, but found no purchasers. The price I either did not hear, or do not recollect.

Wednesday, 23rd.—Last evening, at seven o'clock, I took my place in the diligence, the director having freely agreed to take me without any additional charge, and at seven this evening I arrived at Montpellier. In going into Beziers about nine o'clock this morning, I observed hoar frost upon the grass where the sun's rays had not penetrated. The whole country from Beziers to Montpellier, on both sides of the road, is covered with vineyards. Between the former town and Penzenas the country is extremely beautiful even at this season. The hills are covered with olive trees, intermixed with vines, but the plains with vines only. Detached habitations are every where thickly scattered over the country. The vine is cultivated even in the alluvial plains, and the immense

size of some of the stocks, with the vigour of their numerous shoots, affords ample evidence that whatever may be the quality of its produce, the plant itself is no enemy to a rich soil. Notwithstanding the apparent richness of the soil, I observed them every where digging in large quantities of dung, and this, as well as the mode of pruning, indicated that they were more anxious for the quantity than the quality of the produce. The wines of this district are almost universally converted into brandy. The soil had the appearance of being calcareous the whole way from Beziers to Montpellier, in some places almost resembling the albarizas of Xeres, but on trial I found it argillaceous.

Notwithstanding the great luxuriance of the vines, and the strength and length of their shoots, still no supports nor props were used. Here and there I observed the shoots of three neighbouring vines tied together to afford each other support, but even this practice was rare compared to the whole, which are allowed to spread as they will, and cover the ground in such profusion as to make it in most places difficult to penetrate amongst them.

Thursday, 24th.—I this morning proceeded to the Botanic Garden, in the hope of finding some one who would give me information of the nature I required. My expectations were also a good deal excited by having heard from an Englishman whom I met at breakfast, that the Professor of Botany had there a collection of vines. I was not long in discovering this collection, which was numbered up to 560 varieties. I did not hesitate a moment to inquire for the Professor, and to make known to him the object of my visit. He received me with great kindness, and asked many questions respecting the Australian settlements, in which he appeared to take a great

deal of interest. He conducted me over the gardens, and through the conservatories, pointing out every object which he thought would interest me. The latter are very extensive, and in the most perfect order. Among other plants he made me remark the *Galactodendron*, the "tree of the Cow, or Milk tree," of Humboldt, which he said would undoubtedly grow in New South Wales. He also pointed out, growing in the open air, the *Caroubier* of Spain, the *Ceratonia Siliqua* of Linnæus, that yields a pod, upon which the mules are almost exclusively fed in the mountainous districts of Spain, and the south of Italy. This tree I had not so much as heard of. There was a small department separate for New South Wales plants, of which there was a considerable number. Finally, Professor Delisle told me, that I was not only welcome to cuttings of all the vines he had, but he offered me his correspondence for any thing he could in future supply. He also said, he would make up a packet of seeds for our Botanic Garden. In return for such liberality, I did not hesitate to pledge myself to make him whatever returns our Botanic Garden could supply. He accordingly called for the catalogue of vines, which was partly printed, being a copy of the list of the *Ecole* of vines established in the Gardens of the Luxemburg, at Paris, by Messrs. Chaptal and Bosc, when the former was Minister of the Interior. A great proportion of the numbers which had been left blank in the original, were filled up in writing. He gave directions that a copy of the list should be prepared for me, and that a man should attend me take the cuttings of the vines. I determined to take a duplicate of each variety.

Saturday, 26th November.—Having ordered a quantity of leaden tickets to mark the cuttings, and a couple

of cases to contain them, I proceeded to the garden yesterday morning, and found that the man had already commenced to take off the cuttings. On examining those he had taken, however, I immediately saw the necessity of making the choice for myself, and I have accordingly been engaged all yesterday and to-day in choosing the cuttings. This evening, by the assistance of a second man, who dressed the cuttings as they were taken off, we had finished this part of the task, and commenced attaching the numbers.

Monday, 28th.—This day, at an early hour, I proceeded to the garden, expecting to have all the vines numbered and packed before the evening. In this, however I was disappointed. While the workmen were at dinner I spent an hour with the Professor, who shewed me his Herbarium, which appeared to me very extensive. Among others he opened out some New Holland plants, which had been collected by Labillardiere, the Botanist, who accompanied D'Entrecasteaux in his voyage. In reply to my enquiries respecting the history of the vines, the object to me of greatest interest, he informed me, that about 12 or 15 years ago, when Messrs. Chaptal and Bosc had formed the gardens of the Chartreuse, adjoining the gardens of the Luxemburg, into an experimental garden, specimens of the different varieties were also sent to the Botanic Garden of Montpellier, but many of these never succeeded. He told me that he had found it very difficult to obtain from the chief gardener at Paris the different varieties which he required to fill up the vacancies occasioned by those which had failed; they always sent *chasselas, chasselas, chasselas*, though under different names. A great part of the collection had therefore been brought together by the Professor himself. Mr. Delisle

told me that there was a similar collection of vines at Versailles and there was also one at Genoa.

All this day was employed in attaching the tickets to the vines, and arranging them in bundles, which, from many of them being very crooked, was no easy task. From the 560 varieties I could only make up 437, the remainder being either wanting in the original, or marked as identical with some previous number. I had also employed the master gardener to send a man, on whose judgment and honesty he could depend, to make a collection of all the vines cultivated in the vineyards round Montpellier. This man had all his lifetime been employed in the vineyards, and as he gave me a description of the qualities of each, I had no doubt whatever that his collection might be depended upon. Rejecting from those he brought me, such varieties as I had previously procured at Perpignan, I was now enabled to carry the collection of vines of Rousillon and Languedoc, or Pyrenees Orientales and Herault to 38. I here again reduced the number of Mr. Durand's vines, taking only 12 of each of them, as well as of those cultivated in the neighbourhood of Montpellier. When I came to pay for their carriage from Montpellier to Nismes, I had no reason to regret this reduction.

Wednesday, 30th November.—It was half-past 10 this morning, when the packing of the vines was finished, and at 11 o'clock I started with them by the Diligence for Nismes. Before leaving the garden I paid a farewell visit to its liberal Director, Mr. Delisle. I now received from him a letter addressed to Mr. Frazer, the Colonial Botanist, at Sydney, and also one for myself. In both he expressed his wish to maintain a correspondence with Sydney, to reciprocate the exchange of seeds and plants.

He also gave me an introductory note to M. Audibert, the proprietor of a very extensive and celebrated nursery at Tarascon, a small town situated on the left bank of the Rhone, which he strongly recommended me to visit. A fourth paper contained hints about the best mode of preserving the cuttings from frost and damp; but on that subject he recommended me particularly to consult M. Audibert. Mr. Delisle had also waiting for me, a packet of botanic seeds, which he had put up for the garden at Sydney; and a packet of seeds of the more useful trees, &c. for myself.

The Botanic Garden of Montpellier is only second in France to that of Paris. It appeared to me to be kept in very high order.

The weather has now become piercingly cold. On Friday and Saturday I found it very unpleasantly so in the garden, but on Sunday evening a strong wind set in from the north, and next day all Montpellier was wrapt in cloaks. The sloping glass roofs and windows of the conservatories were now all covered with straw mats, which were not rolled up till the sun had attained a considerable height.

The road from Montpellier to Nismes lies through a well cultivated country, producing chiefly vines and olives. The vines appear here to be cultivated for wine for the table more than for distillation. Their size and strength were less remarkable than on the other side of Montpellier, and although I saw several parties hoeing in the vineyards I could nowhere observe them digging in manure. Here for the first time I saw the mixed cultivation of vines, olives, and corn, alternating in rows of different widths; and the vineyards are also very generally planted with olive trees. This seems to be the

season for gathering the fruit of the latter. They place large ladders against the trees and ascend to pull them, instead of beating them down with poles, as is the practice in Spain. The women are very generally employed in this way, and from all parts of the road are to be seen with small baskets slung round their necks, either perched upon a ladder, or mounted into the interior of the trees. Half-way from Montpellier to Nismes lies the town of Lunel, which with Frontignan, also in the same neighbourhood, is famous for its sweet wines. These I did not, however wait to visit, being now satisfied that whatever may be the case with regard to the quality of dry wines, it requires only a good grape, a hot sun, and a particular management, to make excellent sweet wines. A gentleman in the Diligence informed me that the *Lunel* is only produced on one estate, but in this I think he was misinformed.

1st December.—The Diligence for Tarascon not starting till half-past eleven, I had time to visit many of the beautiful and highly interesting remains of Roman architecture which are to be found in Nismes. The cold, last night and this morning, has been excessive. I have seldom found any thing more keen and penetrating than the north wind out of doors, and the air of my chamber was almost intolerable till a large fire (for which the charge of two francs was made in my bill) had been some time burning. Even then, and with the assistance of a screen, it was still difficult to keep off the cold. The tiled floors are ill calculated for the winter, however suitable they may be for the summer temperature of these climates. In the morning the canal was frozen over, and there were pieces of ice of six cubic inches in thickness about the fountains.

I arrived at Tarascon about half-past two o'clock, and, having procured a guide, proceeded immediately to the nursery of the Messrs. Audibert, whom I found at home. The nursery is about a mile and half from the town. Messrs. Audibert expressed the greatest desire to be of service to me. One of the brothers conducted me through a great part of their nurseries, which are extensive and apparently very well kept. He also insisted that I should remain for the night, and made up a packet of every variety of seeds which they could imagine would be useful in New South Wales. The elder brother, M. Urban Audibert, is a corresponding Member of the Horticultural Society of London, and has, as M. Delisle informed me, a very extensive correspondence in all parts of Europe. His library is filled with books on all matters connected with rural economy and natural history, in all languages. I selected from their list of vines eight or ten varieties, which I either knew to be wanting in M. Delisle's collection, or conceived to be so valuable that I was glad of the opportunity of making still surer of possessing them. These, being rooted plants, will afford the proof whether they or the cuttings are more capable of bearing the transport to New South Wales.

Having, according to the advice of M. Delisle, consulted Messrs. Audibert respecting the packing of the plants, he expressed his fear that without moss they would soon all die; for the north wind, he observed, caused dryness as much as the heat; his brother was accordingly kind enough to accompany me to the town, with a man who carried a bag of moss. The plants were unpacked, and the boxes lined with double oiled paper, to prevent the access of air, and the escape of

humidity. The moss, after having been slightly watered, was stuffed in at the ends of each bundle of plants. The latter were then replaced, and the cases closed. This is the mode adopted by Messrs. Audibert in sending vine plants to Russia, and other countries of Europe; and they were of opinion that this would be sufficient to protect the vines till their arrival within the tropics, when the warm weather would cause them to shoot, and it would therefore become desirable to sustain the shoots a little by the admixture of earth or sand among the cuttings.

Messrs. Audibert refused to receive any payment for the plants I had selected from their collection, although I insisted very strongly on paying the stated price, as well as for the time his workman was occupied. He furnished me with several copies of his catalogues, and as I had informed him there was an Agricultural and Horticultural Society in New South Wales, he expressed a strong desire to be put in communication with them. M. Audibert also furnished me with introductory letters to the Directors of the Botanic Garden, and of the Cabinet of Natural History at Marseilles.

I concluded these matters in time to join the diligence for Marseilles, which passed at half-past two, having, by Mr. Audibert's advice, forwarded the cases containing the plants to Avignon, there to wait my return to that town.

I had several times endeavoured, but without success, to ascertain the best mode of pickling or preserving olives. Mr. Audibert told me he had no doubt the inn-keeper where I had left my baggage could inform me; and I took down from his dictation the directions, of which the following is a translation. The olives which he pro-

duced as preserved in this way were of an inferior kind, but appeared very well cured. “——To make a lye, take for each pound of olives a pound of ashes, and an ounce of lime; boil these ingredients in water till the lye is neither too thick, nor too clear.

“When the flesh of the olives detaches itself easily from the stone, which happens about six or seven hours after their immersion, the olives are washed with clear water, and left to steep for about nine days, the water being changed at least once every 24 hours. They are then kept in water, strongly charged with salt, and seasoned with a few grains of coriander seed, to give them a good taste.”

This recipe was scarcely finished at the moment it was necessary to join the Diligence, and I had not therefore time to read it, much less to ask such questions as are necessary to make it fully intelligible. The lye is doubtless intended to free the olives from the bitterness natural to them when fresh.

Saturday, 3d December.—At an early hour this morning I arrived at Marseilles. My object in coming to this city was to visit the districts in its neighbourhood, where the raisins and other dried fruits of Provence are prepared.

I lost no time in waiting upon M. Negrel Ferand, the Director of the Cabinet of Natural History, whom I found not only very ready, but extremely well qualified, to give me the information I required. He said that almost the only district where raisins were made for exportation was Roquevaire, which was his native place, and to which he gave me a letter.

M. Negrel Ferand has contributed the division that treats upon Agriculture and Rural Economy, to a quarto

work now publishing in four volumes on the Statistics of the Provence of Bouches du Rhone.

Being anxious to obtain the volume which treated upon this subject, he told me that I could not purchase it without the others, and that the whole work was not yet complete; but he very good-naturedly gave me his own proof sheets. This work contains a detailed classification, and botanical description of the vines cultivated in the department of Bouches du Rhone, or Provence, to the number of 74. The whole number which exists is stated to be about 350, but the above are all that are considered valuable for cultivation. The most of the others are cultivated in gardens and nurseries more as an object of curiosity than usefulness, of the 354 varieties, 220 have been perfectly identified with those bearing the same names in the collection of the Luxemburg.

In speaking of the olive, M. Negrel Ferand said, that its mode of bearing is biennial; that is, that the young wood must be two years old before it bears fruit. This accounts for the pruning every two years, and the frequent deficiency in the crop every second year. He said it was a point on which there existed much difference of opinion, whether it were better to prune the trees partially every year, and thus to have always a quantity of bearing wood, or to prune them fully every second year, and have a full crop once in two years. In this part of the country the olive is subject to great injuries from the severity of the weather; a great part of the trees in a whole district being occasionally cut off by the frost of a single night. The roots still remain, however, and are not long in sending up strong shoots, but the trees in this part of the country never attain to

any great magnitude. When the crop of olives is very small, they are generally attacked by insects. The annual average quantity of oil produced from each tree is only about two quarts. The best oil for eating is extracted cold, what is extracted by warm water is used for burning, and for soap, and other manufactures. The oil of Marseilles is certainly more pure and beautiful than I have elsewhere seen it. The finest oil of France is produced at Aix, eight leagues north of Marseilles.

I walked with M. Negrel to the Botanic Garden, for the Director of which I had also a letter. The garden is neither extensive, nor particularly well furnished. The Conservatory is handsome, but is too large to be easily heated. The collection of plants is insignificant compared with that of Montpellier. I saw a swamp oak, a pretty large tree, and a splendid specimen of the caoutchouc in the conservatory. A specimen of the latter in the open air had been killed by the frosts of the preceding week, notwithstanding its having been wrapped up with straw mats.

Monday, 5th December.—Having engaged a cabriolet and a guide from my *maitre d'hotel*, I proceeded at an early hour to Roquevaire; the distance is about 12 or 14 miles in an easterly direction. The road almost every where proceeded among steep acclivities, through a country which the industry of man has won from its original barrenness, and which is on all sides cultivated like a garden, with every variety of produce. The hills, or rather mountains, which bounded the horizon to the right, formed a very rugged and picturesque background to this picture of industry. There is scarce a spot which by any degree of labour could be gained from the rocks, that is not under cultivation; and the same

field frequently bears at the same time a triple crop; first is a triple or quadruple row of vines, then an open space from 6 to 12 feet wide, under corn or legumes (and I could not but observe the garden pea several inches above the soil, and perfectly uninjured, notwithstanding the severity of the late frosts); lastly, there is with every third row of vines, a row of olives, and not unfrequently the whole is surrounded by a hedge of mulberries. The same system is pursued on the sides of hills so steep, that it is necessary at every 12 feet to have a wall three feet in height. Notwithstanding the natural ruggedness and poverty of this country, it appears to be every where teeming with a fine, healthy, and well fed population.

Between 11 and 12 o'clock I arrived at the house of M. Brest, the gentleman to whom, in the absence of the Mayor, M. Negrel had given me a letter. Besides being a proprietor of land, M. Brest is an extensive soap manufacturer and merchant; his premises are very extensive, and comprise a great variety of accommodation. In several of the rooms on the ground floor, women were employed in packing raisins into boxes and frails, similar in every respect to those used at Malaga, and the prices of the raisins appeared also to approach very near to those of that place.

The first quality is made from the *Panse*, or *Passe*, a largish white grape, but by no means so large as some others. The skin is rather fine than hard; the bunches are sometimes very large, although M. Brest informed me, that they are reduced in drying to one-fourth of their original weight. The second quality is from the *Arignan*: the raisins of this grape are equally well flavoured, and keep as well, but are smaller. When the

former are thirty francs the quintal of 100 pounds, the latter are only from 20 to 25. The third quality consists of the smaller and loose grapes of the others, which are packed in frails; they are worth from 15 to 18 francs per quintal. The raisins of Roquevaire are packed in boxes, containing 12, 25, and 50 pounds, as at Malaga; but between every two inches in thickness of grapes they spread a sheet of white paper. These raisins, M. Brest says, keep the whole year through. They are certainly in every respect inferior to the raisins of Malaga. Their preparation invariably consists in immersion in a boiling lye previous to drying. They do not appear to be aware that it is possible to preserve the raisins without this previous preparation. M. Negrel says, the effect of the lye, in which they are kept from 15 to 20 seconds, is to open very fine cracks in the skin of the grapes, by which cracks the moisture evaporates. The strength of the lye is of the fifth degree of Beaume's hydrometer, which is equal in specific gravity, at the temperature of 55 of Fahrenheit, to about 1.032. After having been dipped in this lye, the grapes are spread out on *claiés*, which consist of a number of reeds tied together, so as to form a flat surface of about seven feet by four. They are brought under cover every night, and if the season is fine, they are usually sufficiently dried in five days, though in the latter part of the season, it sometimes requires fifteen days to dry them sufficiently. The preparation of raisins commences about the 25th of August, and continues during the whole of September, and sometimes as late as the 1st of November. Those raisins are finest which are dried in the shortest time. The neighbourhood of Roquevaire is the only part of France where dried raisins are prepared as an article of commerce, in other parts they

are cured by particular individuals for their own consumption. The *Panse Musqué*, or *Muscat of Alexandria*, is also found in this district, but although M. Negrel says it is the identical variety which yields the Muscatel raisins of Malaga, and though he strongly recommends it to cultivators in preference to the others, it is very seldom made into raisins. M. Brest says, the thickness of its skin makes it very difficult to dry it in this climate. M. Negrel also says, that the *Panse Musqué* is less cultivated than the *Panse*, because it is very delicate in flowering, and frequently blights. He says, however, that this may be remedied by pruning it long, and cultivating it in a trellis; the common *Panse* also requires to be pruned rather long. The whole quantity of raisins of the first quality produced for sale in Provence does not in the average of years exceed 4,000 quintals (400,000 pounds). According to M. Brest, the preparation of raisins is nearly on a par, as far as regards profit, with the making of wine. During the continental war, when it was impossible to import the raisins of Malaga and Calabria, those of *Provence* were in much greater demand, and their cultivation was much more profitable.

M. Brest had also a large quantity of figs packed in boxes, and ready for packing. The preparation of these consists simply in drying them on the *claires* for four or five days after they are pulled. The flat form which most of them have is given them in the boxes, each fig being separately pressed into the box. The larger and smaller figs are packed in separate boxes, and the finest quality is double the price of the inferior. Nothing can be more simple than the drying and packing of figs. M. Negrel Ferand describes sixty-seven varieties of figs which are cultivated in the department of Bouches du Rhone. He

quotes two authors, *De Solier* and *Raymond*, showing how much the cultivation of this fruit had fallen off within the last two centuries. The former, who wrote in the 16th century, after describing the means then pursued in drying them, adds, "that those of the inhabitants who had least, could sell from 100 to 150 quintals"—from 10,000 to 15,000 pounds. "Two centuries later," the latter says, "the quantity of figs which the inhabitants dried formerly was their principal produce, but now each proprietor only gathers about 40 quintals, (4,000 pounds), not more than enough for the consumption of his own family!!"

The next object which attracted my attention, was a quantity of large earthen jars, capable of containing from 40 to 60 gallons each. These were filled with capers of different sizes, from the size of a small nut to that of a very small pea, or rather to half the size of a very small pea. The latter are called *Nonpareils*, and are worth 32 sous (16*d.*) a pound. The former being the coarsest quality, are worth only 3 sous a pound. Between these extremes there are 8 or 10 different qualities, all varying in price according to their size, the smaller being always the more valuable. They are put into vinegar as soon as they are gathered, after the different sizes are separated by means of a succession of coarser and finer sieves; and they need no other preparation. I observed a quantity of olives spread out upon some *claires* on the floor; they did not appear to have suffered in any degree from the worm, as was the case with most of the other olives I had seen. Many of them still retained a greenish, or rather a whitish colour, while the majority were either of a deep purple colour, or perfectly black. M. Brest said these light

coloured olives, pressed separately, would yield a finer oil than the others, though less in quantity.

From the apartments where the dried fruits were in process of packing, M. Brest conducted me through his soap manufactory, which is on a considerable scale, soap being one of the most important manufactures of Marseilles, and being made chiefly with the inferior kinds of olive oil; thence to a saw-mill, turned by water, and finally, to a room heated by steam for the treatment of silk worms. M. Brest next took me through the plantation adjoining his buildings, to show me how the caper is cultivated. At present the bushes are all covered with soil to prevent them being destroyed by the frost, and preparatory to this they had been pruned down to the length of from six to 12 inches each branch or shoot. In the spring they are cut down close to the stock, so that every year produces new branches. The bushes which yield the capers, if well treated, will last for 40 years; they yield on an average one pound and a half of capers, though some of the very strong bushes will occasionally yield from five to six pounds. The caper is the flower bud before its development; the largest and least valuable grow near the bottom of the branch, the smallest at the top. They are gathered by women at the expense of a halfpenny a pound. The bushes are about four feet apart; they are propagated by means of offsets from the roots, two of which offsets were presented to me by M. Brest. On opening the box which contained these offsets in London, I had the mortification to find that they had both perished. Having expressed my desire to procure cuttings of the grapes which are dried for raisins, and of any other sort cultivated in the district which I had not already procured, M. Brest sent a boy to conduct me to

a property of his own, with a message to the *fermier* to give me the different kinds I wanted. He observed that he would have accompanied me himself, had he not been very busy packing up a quantity of fruits which were required to be sent off immediately. The whole of the ground over which I went is cultivated like a garden. In many places the vines are only planted along the edges of the terraces, which are every where built to support the soil. The caper is very generally cultivated in this district. The *fermier* was not at home, but soon arrived. He gave me cuttings of six new varieties, a dozen of each. The vines are pruned, leaving on each shoot two buds, exclusive of the one at the junction. These are the vines which yield the grapes for drying; there were from two to three shoots on each vine pruned in this manner. The *fermier* said, that each vine produced from 8 to 12 bunches. According to M. Brest, the ground in this district is all trenched to the depth of $2\frac{1}{2}$ or 3 feet before planting, but they do not put in the cutting the whole of this depth. M. Negrel states, that it has been observed that the roots come from the two buds nearest to the surface only, and that the lower part of the cutting imparts to the remainder a portion of its decay. There is a good deal of sweet wine made in this neighbourhood, chiefly from a variety of the Muscat grape. The wines of *Provence*, or Bouches du Rhone, are not celebrated, nor do they appear to be known as well as they deserve to be. They have never furnished many choice wines for commerce, but M. Negrel says many proprietors make them of excellent quality, when they take some trouble to have them good for their own consumption. I returned after an excursion of an hour and a half to the house of M. Brest, who pressed me to remain for the night, and

return to Marseilles next day ; but this kindness my anxiety to get forward, induced me to decline, and, after partaking of some fruit and wine, I returned to Marseilles.

Tuesday, 6th December.—During the course of this day I visited M. Negrel. He is now engaged in removing the collections of Natural History to a new Museum. I was happy to be able to promise that I would send him from London a stuffed *Ornithorhynchus paradoxus* and a few shells. M. Negrel is only *pro tempore* Director of the Cabinet of Natural History at Marseilles; M. Roux, who holds that appointment permanently, being at present travelling in the East Indies with a German naturalist. M. N. said it was probable they might visit New Holland, in which case he recommended them to my attentions.—Through the kindness of Mr. Gower, an English merchant, to whom I had brought a letter of introduction, I procured letters to Valence, to the neighbourhood of Beaune, and to Dijon; the first, in order to enable me to visit, with advantage, the vineyards of Hermitage,—the two latter, those of Burgundy. I then procured, for the purpose of planting in New South Wales, a quantity of very fine fresh dates, three varieties; the first was called the date of Oran; the second, the Muscat date: both of these were from Tunis. The third was the common date of Barbary, to which they attached little value.

Wednesday, 7th December.—This morning, at seven o'clock, I quitted Marseilles for Avignon, where I arrived at eight in the evening. The whole district from Marseilles till within a few miles of Avignon, is, to all appearance, of the most sterile description, though everywhere cultivated with the greatest care. Aix, about 20 miles from Marseilles, is celebrated for the quality of its oils; but from this town, onwards, the olive becomes more rare,

its place being taken, in general, by the mulberry. The plain round Avignon is said to be one of the richest in France. At Avignon I found that there is a regulated price at which the diligences are accustomed to take merchandise, much lower than they charge for the additional baggage of a passenger. I accordingly agreed for the carriage of the two cases of vine plants to Lyons.

Friday, 9th December, Valence.—Having joined the diligence for this place late on Thursday evening, I arrived about seven this evening, and immediately proceeded to the house of the merchant for whom I had brought a letter. I was informed that he was then from home, and it would be very late before he returned. I was, therefore, prevented joining a diligence which was to proceed to Tain at eight next morning. After quitting Avignon I saw no more olives, but the mulberry was most abundant on all sides; and every person with whom I have spoken on the subject, including Messrs. Durand, Professor Delisle, Messrs. Audibert, Negrel, and Brest, concur in representing the rearing of silk worms as a most profitable pursuit. M. Audibert said, that many persons in their neighbourhood who had mulberries did not themselves rear the silk worm, but disposed of the leaves to others. The ordinary price given for the leaves of a good-sized mulberry tree was from seven to eight francs, and if the leaves happened to be scarce, so much as 10 or 12 francs have been given. They do not begin to strip the trees of their leaves till they are five or six years old.

Saturday, 10th December.—The gentleman to whom I brought the letter was not himself a proprietor of vineyards at Hermitage, but was requested to introduce me to some person having a vineyard there. On waiting upon him this morning, I found a letter prepared for me,

addressed to Messrs. Richard and Sons, who are eminent wine merchants and bankers in *Tournon*, a town on the opposite side of the Rhone to *Tain*, and joined to it by a suspension bridge. On receiving this letter, I hired a vehicle to carry myself and my baggage to *Tain*, which is a small town, situated on the left bank of the Rhone, on the plain which lies immediately between the hill called *Hermitage* and the river. On presenting my letter, and explaining in general terms the object of my visit, I entered into conversation with M. Richard, senior, relative to the wines of *Hermitage*. The greatest part of the finest growth is sent to Bourdeaux to mix with the first growths of *Claret*. Messrs. Richard are themselves proprietors of part of the hill of *Hermitage*, but not of that part which yields the finest wines. They are also wine merchants, but, like the Messrs. Durand, of *Perpignan*, they sell it only on the grand scale. One of the sons who manages this department, conducted me over the cellars. The press is more complete than any I have yet seen; the screw is of iron, and from the closeness of the worm, must be of immense power. It is raised in the centre of a square trough, about seven feet in diameter. The female screw is covered by a horizontal wooden wheel, the spokes of which project over the sides of the trough, and are finished off so as to afford a convenient handle for the workmen. At the height of a foot from the bottom of the trough, on the outside, there is a circular stage projecting from its sides for the workmen when filling the press, and turning the wheel. The sides of the trough only rise to the height of this stage. The grapes, without any previous treading, are built up in the trough to the height of the screw, and when the latter is turned, the *must* flows from spouts which issue from the bottom of the trough

at each side. When the sides of the mass which may have been pressed out so far as to escape from the action of the press have been cut off with an instrument resembling a hay knife, and the press has been raised so as to receive this additional quantity, and again put in operation, the process is complete; not a drop of *must* remains in the *marc*, as the mass of skins and stalks is called. The *marc* is disposed of, and employed to produce a bad brandy. For this purpose it is soaked in water to extract any saccharine matter which may remain, and the fluid which it yields, when again pressed, is fermented and distilled. To my astonishment M. Richard informed me, that by one charge of this press they could obtain 40 casks of wine, of about 50 gallons each. As the *must* flows from the press, it is conveyed to the casks, where it is suffered to ferment from five days to a month, according to the strength of fermentation, the casks being always kept full to permit the scum to escape. When the first fermentation is decidedly finished, the wine is drawn off into a clean cask, which has been previously sulphured. This is the whole process of making the white wines of Hermitage. They are more or less sweet, according to the proportions of sweet and dry grapes which have been united in producing them, for they are all made from two varieties, the *Marsan* yielding a *must*, which by itself would give a sweet wine, and the *Roussette* a *must* which by itself would yield a dry wine.

The white wine of Hermitage, even after having undergone the complete fermentation above described, still retains a disposition to effervesce when put into bottle. It is said to be without question the finest white wine of France, and will keep for 100 years, improving as it gets

older; and when very old, acquiring a similarity to the white wines of Spain.

For fermenting the red wines, Messrs. Richard have two vats, each capable of containing 16,000 gallons. Every day as the grapes are brought from the vineyard they are trodden in troughs, and then emptied into the vats, and while the vats are filling, a man gets into them once a day to tread down the surface. The object of this is to prevent the surface from becoming sour by exposure to the air, and to render the fermentation as equal as possible through the whole mass. When it becomes too deep for a man to tread it to the bottom, he suspends himself by the middle from a plank across the vat. The duration of the fermentation is very uncertain, depending upon the state of the weather, and the ripeness of the grapes. Messrs. Richard ferment the finest grapes in one vat, and those of an inferior quality in the other. I tasted the wine of both vats of the last vintage; the first was made of the best grapes, which were also gathered in dry and warm weather; the second quality was made from the inferior grapes, and from others which had been gathered during rain and cold weather.

The fermentation of the first was over in five days, and its present value is 300 francs the cask of 210 litres (that is, about as many bottles), the other continued fermenting in the vat for twenty days, and its present value is only 80 francs for the same quantity.

The finest Clarets of Bourdeaux are mixed with a portion of the finest red wine of Hermitage, and four-fifths of the quantity of the latter which is produced, are thus employed. The wines are racked off the lees in spring, and sulphured. A very small piece of sulphured match

is burnt in the casks intended for the white wine ; the red wine requires a greater portion. These matches are purchased from persons who make a business in preparing them. They are slips of paper, about one inch and a half broad, and when coated on both sides with sulphur, are about the thickness of a sixpence. A piece of one inch and a half square is sufficient for a cask of white wine containing 50 gallons.

On returning from visiting the cellar of old wines, which is under the other, I found one of M. Richard's sons in the office, who had been 12 months in England, and spoke English very correctly. He took me to visit one of the largest proprietors of the part of the hill of Hermitage, which produces the best wines. We found him at home, and walked with him to two of his vineyards. The hill of Hermitage is so called from an ancient hermitage, the ruins of which are still in existence near its top. It was inhabited by hermits till within the last 100 years. The hill, though of considerable height, is not of great extent ; the whole front which looks to the south may contain 300 acres, but of this, though the whole is under vines, the lower part is too rich to yield those of the best quality, and a part near the top is too cold to bring its produce to perfect maturity. Even of the middle region, the whole extent does not produce the finest wines. M. Machon, the gentleman whose property we were traversing, pointed out to me the direction in which a belt of calcareous soil crossed the ordinary granitic soil of the mountain, and he said it requires the grapes of these different soils to be mixed, in order to produce the finest quality of Hermitage. I took home a portion of the soil which he pointed out as calcareous, and the degree of effervescence which took place on my pouring vinegar

upon it, indicated the presence of a considerable portion of lime. It is probably to this peculiarity that the wine of Hermitage owes its superiority, for to all appearance many of the neighbouring hills on both sides of the Rhone present situations equally favourable, although the wine produced even upon the best of them never rises to above half the value of the former, and in general not to the fourth of their value. A good deal may also be attributable to the selection of plants. The best red wines of Hermitage are made exclusively from one variety, and the white wines from two varieties; but in the district generally a much greater number of varieties are cultivated. The Red Grape is named the *Ciras* *. The white varieties are the *Roussette* and the *Marsan*. The former yields by itself a dry and spirituous wine, which easily affects the head—the plant produces indifferently—the latter yields a sweeter wine—they are mixed together to produce the best white Hermitage.

The labour bestowed upon these vineyards is immense. According to M. Machon, on their first plantation, and every time the plantation is renewed, the soil is dug to the depth of $4\frac{1}{2}$ or 5 feet. In most places it is also supported by terraces. This was the first place, in the course of my journey, in which I observed any supports given to the vines, but these were simply a stake of about five feet in height to each plant, and the shoots were tied together at its top; far from the care indicated by the small trellis of the Medoc vineyards, this part of the labour seemed to be

* In the *Œnologie Française*, a very minute and correct account of the French vineyards, published in 1826, the name of this grape is spelt *Scyras*; and it is stated that, according to the tradition of the neighbourhood, the plant was originally brought from Shiraz in Persia, by one of the hermits of the mountain.

performed in the rudest possible manner. M. Machon informed me that the vines require constant attention to keep them in bearing, and whenever a vine is observed to be weak, or to yield a poor crop, it is dug out, and its place supplied by a *provin* from the strongest vine in its neighbourhood. I saw this operation commenced and completed. A vine which appeared weaker than the rest was dug out, and a trench of about two or two and a half feet deep, was opened up between it and the nearest vine in the adjoining row. This vine bore three vigorous shoots; the stock was carefully bent down till it was laid flat along the bottom of the trench; a quantity of dung was next put over it, and then some soil; of the three shoots, the least favourable from its inclination was cut off, one of the two remaining was bent back to the original position of the stock, and there fixed by the covering in of the soil; the other, in like manner, was bent in the opposite direction to fill the place of the plant which was dug out. It is evident that this is a very different process from that of filling a vacant space by bending the shoot of an adjoining vine into the ground till it issues at the place where it is intended to grow, and afterwards, when it has acquired sufficient strength, cutting off its connection with the original; the stock actually became the root of two distinct vines, and their connection is never destroyed. This process had taken place with a considerable portion of the vines this season, and a portion of them are annually treated thus:—Into each trench was put rather a large basket full of stable dung, mixed with soil. On my expressing great surprise that dung should be used at all in a vineyard of such reputation, as I had always understood, that though it added to the quantity of the wine, it injured its quality, and often gave it a bad

flavour, the proprietor said, that without frequent and strong manuring the vines would scarcely yield any thing ; and that provided horse or sheep dung only were used, there was no danger of its giving the wine a bad flavour, though the contrary was the case if the dung of cows, and still more that of pigs, were made use of. M. Machon gave me 12 cuttings, the number I requested, of each of the three varieties of vines. He strictly charged the vigneron to select them from young vines ; he said it was with the greatest difficulty they could get the vines to last 30 years, and they would not last more than half of that time, if they were not taken from young vines, that is, from vines of five or six years. The vines of Hermitage are planted at the distance of only $2\frac{1}{2}$ feet from each other, and are pruned differently from any I have before observed. They are not anxious to keep the stocks low, as in the south, but many of the older among them are 18 inches, or two feet in height. In general there is only one mother branch, and one shoot only (very seldom two) is pruned to yield the shoots of the season ; on this shoot are left from 3 to 8 buds, according to its strength, and from 8 to 10 bunches is the average produce of each vine. However loosely the bearing wood of the season appeared to be tied up in a tuft at the top of the stake, M. Machon showed me that the portion which had been left of the last year's wood was carefully bent down in a circular form, and thus fixed to the stake. This, he said, was to prevent the sap from shooting up with too great force to the top. The average produce of M. Machon's vineyards is from 10 to 12 casks, of about 50 gallons per hectare ; that is, from 210 to 260 gallons per English acre. The soil appeared to be of great depth, and full of small stones and gravel, but still there was every where

a large proportion of good vegetable mould. An observation made by M. Machon was, that the wines of granitic soils soon acquired their maturity, and were in general very pleasant wines for the consumption of the country where they grew, but seldom kept well.

Before parting, M. Richard asked me how I had in general been treated by his countrymen, and he appeared much gratified when I told him that the attentions I had uniformly met with far exceeded either what I did expect, or had any right to expect. Indeed, I have often reflected how ill placed was the reserve I was advised to use about the objects of my journey, when in the Bourdeaux country in 1822. I was then told, that if these were known, it would excite the greatest jealousy wherever I should go, and that I would be thwarted and misled in every possible way. On the present occasion I had no advisers, and acting upon the impulse of my own disposition, I uniformly prefaced my request for information with a statement of the object for which it was required. So far, however, from having been in any one instance ill-received or misled, I have found every person to whom I applied anxious to forward my undertaking. M. Richard expressed a hope, that if I published an account of my journey, I would give his countrymen the credit to which I considered them entitled.

Wednesday, 14th December, Beaune.—After quitting the vineyards of Hermitage, there was nothing which I was desirous of examining, till my arrival in Burgundy, and I accordingly made the best of my way to this town, which is in the centre of the *Cote d'Or*. Spending only one day in Lyons, which was still in a state of ferment from the disturbances that had taken place three weeks before, the road from *Chalons sur Saone*, whence I took

my departure this morning, and Chagny, a small town, where commences the range of hills called *Cote d' Or*, was crowded with people driving cattle and pigs; a gentleman who was with me in the diligence said they were going to a fair at Chagny. I observed a number of very fine working oxen, in pairs; they were yoked by the head, and appeared perfectly docile. My companion said they were worth from 300 to 400 francs a pair. I had a letter of introduction addressed to Rully, near Beaune, and I never doubted that I should find it within a mile of that town. On making inquiry, however, in which direction I must proceed, I was informed that Rully was 13 or 14 miles distant, and that I had passed it by on the road from Chalons. After some hesitation, I resolved, as the weather was extremely wet, to content myself with seeing the vineyards nearer Dijon, to which town I had also a letter. After waiting a couple of hours in hopes of better weather, I procured a boy to conduct me in the direction of Pornard, the nearest vineyard to Beaune, which has any celebrity. After leaving the town, however, for about half a mile, I became tired of walking through the mud, which was in many places ankle deep, and turned aside to join some men who were at work on the road-side. The first thing which had struck me on seeing the vineyards of Burgundy, was the extreme closeness and feebleness of the plants. These men were employed in planting. They opened a small furrow with a spade, only one spit, or about twelve inches, deep, and about nine inches wide at the bottom. The furrows were $2\frac{1}{2}$ feet apart, and the plants were placed in them at the distance of 14 or 15 inches; the lower end of the plant was placed across the bottom of the furrow, and bent up at one side, a quantity of dung was placed above, and then the soil was covered

in, and the plantation finished. They told me that after these vines were three years old, the strongest of them would be selected to fill another row between each of the present row, by the system of *provinage*, the same as I had seen at Hermitage; and thus a space of 15 inches only would be left between each plant in every direction. The vines adjoining had not more space allowed, although the soil appeared exceedingly fertile. They said it would yield a good ordinary wine, but not a fine wine.

The plain between Chagny and Beaune, lying to the south-east of the range of hills, which, from the value of their produce, give the name of *Cote d'Or* to the department, is extremely rich, and to all appearance capable of yielding golden harvests of corn, as the hills do of wine. The greater portion of it, however, was planted with vines on both sides of the road. Near Chagny it appeared lighter, with a larger admixture of stones, and on approaching Beaune, it was a rich brown loam. A portion of the soil taken from where the men were planting was very slightly calcareous. Towards the top the range of hills, which are of no great elevation, not nearly so high or so steep as Hermitage, was not planted, but seemed to be in a state of nature, or in pasturage. The hill of Hermitage was planted to the top.

Thursday, 15th December, Dijon.—Having joined the diligence at ten last night, I arrived here at three this morning. After breakfast I proceeded to the house of the merchants to whom I had brought a letter from Marseilles, but found they were both from home; neither was there any person belonging to their establishment who could in any way forward my views. I applied to the innkeeper; and after telling him the object of my journey, inquired if he were acquainted with any of the proprietors of the best vineyards. He said yes; that he

could give me the address of a proprietor at Gevray, and also of the proprietor of the Clos Vougeot. The day was, however, too far spent to proceed to either of these places. I therefore walked through the mud to the nearest vineyards, and entered into conversation with some of the people whom I found employed in them. The place I visited was a gentle slope, with a south-east exposure. The soil seemed good, and at the same time perfectly loose and full of gravel. It belonged to the mayor of the town, and produced, the man said, a fine wine; by which term the French characterise, generally, those wines which are drunk pure and in wine glasses, in contradistinction to those which are drunk in tumblers mixed with water at their ordinary meals. If, however, I had sought a reason for the wine not having a high name, I might perhaps have found it in the quantity of strong dung he was adding to the soil, and to the mixture of different kinds of vines—the *infamous gamé*, as it is sometimes called, holding a considerable place. He was busily employed in the *provignage*, which seems almost the only work going on at present. He had commenced the same morning, and had dug about twenty trenches, three or four feet long by about two feet wide. In each of these were half-a-dozen *provins*; that is, the ends of the shoots which belonged to the stock that had been buried in the trench. These trenches are never more than half-filled, as the shoots are never sufficiently long to come up to the level of the surface. From this circumstance the whole of the vineyards of Burgundy are full of these holes at irregular distances, and have a very rugged and unworkman-like appearance. I remained while he completed two of these trenches, and he endeavoured to explain to me the process; but all that I could comprehend was, that the shoots were so disposed as to preserve

the alignment, although it would have been very difficult to point out which way the alignment lay. For this purpose the stocks and roots were twisted, and the different plants laid across each other in every possible direction. At a little further distance another man was employed in rooting out a vineyard, which he said had been neglected some years before, and which it had been found impossible to reduce to order. The plants were literally crowded to such a degree, that it was almost impossible to set down the foot without treading upon some of them. Before it should be again planted with vines, it would, he said, be laid down for three or four years with sainfoin. This is a common preparation of the soil for vines in this district, and seems to be almost considered equivalent to a trenching. He said that, for a poor man, the *gamé*, or, as it was generally called, the *large plant*, was undoubtedly the best kind of vine, the quantity it yielded was so much greater than the other; and, to a poor man, the quality was not so much an object, for the large proprietors and merchants would never acknowledge his wine to be a fine one, and it was very difficult to sell it for a high price, however good. He said that, in that soil, the large plant would yield eight pieces of wine on a plot of ground 78 paces by 24 (the extent of that he was working). This is little more than the third of an acre, and is more than 1000 gallons per English acre. It would require, he said, to be occasionally manured. The manure gave a slight flavour to the wine for the first season only, but as only a part of the ground was manured each season, the bad flavour of the part was not observed in the whole. The soil of this vineyard effervesced very strongly with an acid.

Friday, 16th December.—Having engaged a cabriolet

from the *maitre d'hotel*, I proceeded at an early hour this morning for Gevray and Clos Vougeot. It was a retracing of part of the road by which I had arrived from Beaune. The appearance of the range of hills is almost in every respect similar to what it was from Chagny to Beaune, but towards the top it was more generally covered with wood. On both sides of the road the soil also appears similar, but on the north side it is in most places evidently too moist for the vine, and is under cultivation with corn. The young wheat looks healthy and vigorous, but is not nearly so far advanced as in the south. The country is thickly peopled along the whole range of the Cote d'Or. There are said to be fifty villages between Dijon and Beaune, a distance of twenty-six miles. Some of these villages are of very considerable extent, and the houses are in general large, and all whitewashed and in good order.

The village of Gevray is about five miles from Dijon. In its immediate neighbourhood is the small vineyard of Chambertin, as well as several others which yield wines scarcely inferior, though less known to fame. The person to whom my guide was desired to take me was a merchant, as well as a proprietor. He said he would, with the greatest pleasure, give me all the information in his power, and he made some general remarks upon the requisites which must concur to afford a good wine. But he said that the postillion had informed him that he was also directed to take me to the Clos Vougeot, where I would find the confidential manager of M. Ouvrard, the proprietor, who could explain much better not only the management of the vineyard, but the making of the wine, for it was the largest and best managed vineyard in Burgundy. In the meantime, as I had expressed a desire

to see Chambertin, he procured a vigneron, who, he said, was a very intelligent man, and would conduct me to it. Chambertin lay in the direction of Vougeot, but by a very bad road. The land under vines is in general very much subdivided throughout France, but here the properties are of less extent than anywhere I have been. Five or six proprietors often divide among them a piece of ground not exceeding an acre in extent, and the usual extent of most of the separate properties is not more than half an acre. The vigneron said that the wine produced to the left of the by-road we were travelling was inferior to that on the right, which was higher and drier. We turned off into the vineyard of Chambertin, which in extent cannot exceed 15 or 20 acres; but this, like most other parts of the district, is subdivided among a number of proprietors. The vignerons were at work on most of the divisions, which are only made by a footpath, or an irregularity in the plantation. The soil of Chambertin varies extremely, even in the distance of 100 yards; that nearest the road is of a brown loam of sufficient consistency, but full of gravel, and consequently very friable. The gravel consists of small broken pieces of the whitish limestone, of which the hill is partly formed. At the highest limit to which the ground has been broken up, it is a light-coloured clayish looking soil, with a subsoil of marl and abundance of small shells. Both of these soils effervesced strongly with an acid, but the light-coloured evidently contains a far greater proportion of lime. The soils of Beze, another first-rate vineyard of the commune of Gevray, was exactly similar to that of the lower part of Chambertin. A league further on, the middle part of the Clos Vougeot was as nearly as possible the same; but the lowest part of that vineyard is

almost a pure clay, of a dark yellow colour, without any admixture of calcareous matter whatever. From what I had previously observed at Dijon on the one side, and Beaune on the other, I have no doubt that the same character applies, with trifling variations, to the whole range of the Cote d'Or. Nearest the top the soil contains a larger proportion of lime, and this in general yields the driest and best wine. On descending, the clay begins to predominate, and the wine gradually falls off in quality till it becomes the *vin ordinaire* of the country. By dint of frequent observations and repeated questions, I conceive that I at last perfectly understand the system of *provignage*. To make it plain, suppose a small portion of ground to be annually planted with vines. At the end of ten or a dozen years a number of the plants, in the portion first planted, become weak and worn out. These weak plants are removed, and their places filled by provins from their stronger neighbours; but these provins are not mere layers which leave the stock exactly as before. The whole space of ground, generally the breadth of two rows of plants, is dug out to the depth of about two feet; the old stock is then laid flat down in the bottom of the trench, and the branches, that is, the wood last produced, are twisted and bent into the places where the voids are to be filled.—The stock is thus converted into the root of two or three different plants; it throws out fibres from every side, which henceforth yield the nourishment to the plants, and the old root dies off. I observed some spots where all the plants had been too weak, and a colony of young plants, as it was called, had been introduced, which would be employed in peopling their neighbourhood when they had acquired sufficient strength. The *provignage* extends irregularly over the whole vineyard, but most, or all, of the

plants are thus buried, and renewed once in 12 or 14 years; and thus the whole is in a constant state of bearing (the provins yielding a crop the first year), and it is seldom necessary to introduce young vines. All of the small proprietors manure their vines with strong stable dung; they make no distinction between that of horses and that of cows.

After quitting the vineyard of Chambertin, I rejoined the cabriolet, and after recovering the main road, proceeded to Clos Vougeot. This vineyard formerly belonged to a convent, and the buildings are therefore rather extensive. What was the old vineyard is enclosed by a high stone wall, but M. Ouvrard, the present proprietor, has also acquired a considerable portion of the land without the wall, and the present extent of the Clos Vougeot is therefore 48 hectares, $112\frac{1}{2}$ English acres.

I mentioned to the steward of M. Ouvrard my disappointment regarding my letters of introduction, and my having resolved in consequence to trust to the good nature of the proprietor of Clos Vougeot for a friendly reception. He replied, very heartily, that I had done well. He conducted me over the cellars where the wines are made, and subsequently over those where they are kept, explaining the whole process pursued in making the wine, and answering all my questions with great exactness. The first cellar forms a square, or rather consists of four parallelograms, inclosing a square. In each of the four corners is a large square case, or trough, about 12 feet in diameter; and above this an immense lever, worked by a wooden screw, similar to those I had seen for pressing the olives in Spain. Along the walls, on each side, are arranged the fermenting vats, which are each of the capacity of 18 hogsheads. The vintage is in general soon over, M.

Ouvrard employing often from 400 to 450 vintagers at the same time. For the red wine, the grapes as they are brought in are thrown into the large cases or troughs above described, and these trodden by a number of men, with large wooden shoes, till the grapes are nearly all broken. They are then taken up in baskets, with interstices wide enough to allow the grapes to pass through, when a portion of the stalks, generally about two thirds, are taken out. If the whole of the stalks were taken out, the quality of the wine, as has been repeatedly proved, would be inferior. The whole is then put into the vat into which the *must*, as it ran from the treading, had been previously carried. With the number of people employed, it requires a very short period to fill a vat. A space of about 12 inches is left unfilled at the top, and a sliding lid is then put over, which floats upon the surface. As soon as the fermentation becomes violent, the swelling of the mass lifts the lid to the height of six inches above the mouth of the vat. As, however, the skins and the stalks had previously risen to the surface, none of the liquor escapes. A very small space, formed by the looseness of the lid, is considered sufficient to allow the gas to escape, until the rising of the lid allows a greater space. And it is perhaps owing to the confinement of the gas that the lid is raised to such a height. If the weather had been very warm when the grapes were gathered, and still continues warm, while the fermentation is going forward, the wine is soon made. The fermentation is sometimes over in thirty hours, at other times it continues 10, 12, and even 15 days. The best wine is always produced from the most rapid fermentation. When the fermentation slackens, the liquor begins to subside, and when it is entirely over, sinks within the top

of the vat, but not so low as when the vat was first filled, for the *marc*, or, in other words, the stalks and skins, are completely separated from the liquor, and float upon the top.

As soon as it is known by the subsiding of the head, and by the taste and examination of the wine, that the fermentation has ceased, the wine is drawn off into large vats, which contain about 700 gallons each. Every three or four months it is pumped by means of the siphon and bellows into another vat of the same dimension, when a man enters by the small opening left in the end of the vats, and washes out with a brush and cold water any lees which may have been deposited. The Burgundy of the Clos Vougeot receives no other preparation, and it is treated in this manner as often as may be judged requisite, till it is disposed of. They commence selling it when three and four years old, but the wine of very favourable seasons is retained by the proprietor till it is ten or a dozen years old, when it is bottled, and sold at the rate of six francs a bottle. The price of the wine of ordinary vintages, from three to four years old, is from 500 to 600 francs the hogshead, but seasons occasionally occur when the wine is not better than the *Vin Ordinaire* of the country. The wine of 1824 was given to the labourers as their ordinary drink, that of 1825 is now ripening in the large vats, and will be worth, in three or four years more, six francs a bottle. The wine has been found by experience to be of better quality, and to preserve its perfume better, in these large vats than in casks.

For making the white wine, the process here, as elsewhere, is different. The grapes are pressed without being trodden; the *must*, as it flows from the press, is conveyed to the small casks, where it is left to ferment, the casks

being occasionally filled up to allow the scum to escape. The fermentation of the white wine lasts from 10 to 15, or even 20 days. At the end of three weeks, or a month, the white wine is drawn off the gross lees which it has deposited, into clean casks. In the spring it is again drawn off into sulphured casks. M. L'Ecrivain, M. Ouvrard's steward, knows the use of spirit of wine instead of sulphur, but they use the latter from economical motives; the sulphur for a cask costs only a sous, the alcohol to produce the same effect would cost six sous. They do not find that the sulphur tastes the wine. They are getting rid of the white grapes in the Clos Vougeot, for the vines not only produce less, but the price of white wine never rises so high as that of the red wines. It is no uncommon thing for a hogshead of the latter to bring from 1,250 to 1,500 francs, but the white wine never rises above 600 francs the hogshead. The average produce of the Clos Vougeot, that is to say, the average of twenty years, is about 100 *qucues*, of two hogsheads each, or about eight hogsheads per hectare, something less than $3\frac{1}{2}$ hogsheads per English acre. They never manure the vines, and they have no other varieties of the black grape than the *Pineau*, or of the white, than the *White Pineau*, and the *Chaudenay*, which resembles it so much, that the two kinds are confounded. M. L'Ecrivain said, that if he knew of a plant of the gamé in the vineyard, he would have it immediately dug out. Every year they carry up a quantity of the strong soil from the bottom of the vineyard, which, as before observed, consists of a yellow clay to mix with the lighter soil of the higher part. They also mix the wine produced on the higher part of the vineyard with what is produced at the bottom, to make a perfect wine. The wine of the higher

part is by itself too dry and spirituous, and requires the mixture from the lower part to give it body. The substratum is in some places marl, and in other places decayed (*pourri*) rock. The cultivation is much the same as described for Chambertin. M. L'Ecrivain considers that the vineyard is of the proper degree of fulness when the plants are fifteen inches apart in every direction. In the course of from 12 to 15 years all the plants in the vineyard will undergo the process of *provignage*, but the winter before last appears, from all accounts, to have injured the vines exceedingly, and they are every where digging out many of them which have not recovered the effects of the frost. M. Ouvrard, the proprietor of Clos Vougeot, also possesses a portion of Chambertin, and it is probable that to this circumstance the latter is indebted for being brought into notice, for it appears to me indubitable that it only requires similar treatment to make a very large portion of the Cote d'Or produce wines equal to those of Vougeot and Chambertin. But it requires a large capital to effect this, and a knowledge of commerce to make it profitable, and the smaller proprietors appear in general to endeavour to make up by the quantity, for what they sacrifice in the quality, of their wines. From other accounts I am inclined to believe that the produce of a vineyard planted with the *gamé*, and manured, as stated to me at Dijon, viz. about 1000 gallons per English acre, was not much exaggerated. After having received from M. L'Ecrivain a small bundle of each of the kinds of vines cultivated in the Clos Vougeot, and thanking him for his kindness, I took my leave, and arrived at Dijon at rather a late hour.

Wednesday, 21st December, Rheims.—After having quitted the Cote d'Or, the seat of the famous vineyards

of Burgundy, there appeared little to be worthy of my attention till I should reach Champagne, and I therefore made the best of my way for this town, the centre of the district, in as far at least as the chief trade in Champagne wines is concentrated there. For the last two days I had travelled through a bare uninteresting country, consisting almost exclusively of a chalk subsoil, with a thin layer of vegetable mould on the surface. After quitting Dijon few vines were to be seen till after having passed Chalons-sur-Marne, between which and Rheims are situated the *Sillery* vineyards, which produce the famous *still* wines of that name. The range of hills lies to the left of the road, and has an eastern exposure, in some places even to the north of east. The small town of Sillery is three or four miles from the nearest of them. During part of the journey from Dijon to Rheims, I travelled in company with an officer of artillery, who had gone to Algiers with the expedition, and had only returned to France about a month before. The French colony there remains almost stationary; owing to the insecurity of the settlers there is little or no emigration. There are now 1,500 French troops in the country, and it would require not fewer than 40,000 to protect the settlers within 25 miles of Algiers. Allotments of land are only made to actual labourers, and not to a greater extent than from 8 to 20 acres each, and there is generally also a house and garden. The land granted by the French government was the property of those who abandoned their homes on the French taking possession; those who remained were undisturbed in their property. There are also extensive domains which belonged to the dey or the government. Merino sheep are plentiful, and in large flocks,—the mutton is excellent. Beef is not so good.

The French have made excellent wine from very delicious grapes. The civil courts of justice are still preserved as before, and the same officers employed. The same taxes are also raised, but they are of trifling amount. Most of the emigrants, including Swiss, Germans, Italians, and a few Spaniards, have become dealers, leaving to the Bedouins the cultivation of their land. The hostile Bedouins come down upon the outposts in bands of 15,000 or 20,000, but they cannot withstand the attacks of a small body of disciplined troops.

The very eminent wine house of Messrs. Ruinart and Son, of Rheims, are agents for Herries, Farquhar, and Co.'s notes. Having called upon them to cash one of these, M. Ruinart, junior, conducted me over their wine cellars, which are very extensive, and all subterranean, consisting of three under ground stores, one beneath another, all mined out of the limestone rock. The wine which has received the last attentions which it requires, and is ready for expediting to the consumer, is packed in large square masses, bottle above bottle, and side by side, with no other precaution to keep them steady than a lath passing along between the necks of one layer and the butts of the next layer above. They generally send the wine to the consumer at the age of three and four years, but after the first winter, it is all put in bottle. The stock, therefore, appears immense, and indeed it is very large, for not only are different qualities required, but also different descriptions to suit the varying tastes of their customers in England, America, and Russia, to which countries Messrs. Ruinart make their chief exports. A gentleman, with whom I travelled, told me that he could buy very good sound Champagne at Chalons for two francs a bottle, and was then going to purchase

100 bottles at that price, but respectable wine merchants never send any to England under three francs a bottle. What is sent to England is more spirituous, and froths more strongly than what is sold for domestic consumption. The greatest and most minute attentions are necessary in preparing Champagne. The casks in which it ferments, after running from the press, are previously sulphured to prevent the fermentation from proceeding to too great a length. It is twice clarified during the winter, and in the month of March, before the return of spring has renewed the fermentation, it is bottled off. When in this state the bottles are placed in frames, diagonally, with their heads downwards. The lees are thus collected in the neck of the bottle, but they do not consider it necessary to uncork the bottles as soon as the wine is perfectly clear, nor is it considered that there is any danger of the wine spoiling if the return of warm weather should cause a re-commencement of the fermentation, and re-mix the lees through the wine. On the contrary, they sometimes allow the lees to remain to ripen, as they term it, longer than usual. The wine, in general, remains in this state till the following winter, each bottle is then placed in a frame, and carefully uncorked. The contents of the neck of the bottle are emptied. It is filled up from another bottle of the same wine, and being re-corked, only now requires age to give it all the perfection it is capable of. It of course often happens, that the wine has either undergone less than the usual fermentation, or being stronger than usual, requires a greater fermentation before being put into bottles; and it consequently happens that the fermentation in the bottles is greater than they can bear, and that a large proportion of them burst during the first summer. The floors of the wine cellars are all covered

with grooves, sloping to a gutter, by which the wine which has burst the bottles is conveyed to a cistern in the floor, and, as there is the most perfect cleanliness observed, a part of the wine is thus sometimes saved.

M. Ruinart, junior, is a large proprietor of vines at Ay, where the first qualities of frothing Champagne are made, and to this place he strongly recommended my proceeding, in order to have the most favourable view of the vineyards of Champagne, of which, he said, the cultivation was every where nearly similar, although conducted at different places with more or less care. He says the ordinary produce of his own vineyards is from 10 to 12 pieces, of about 46 gallons per arpent, which is about a 25th part more than an English acre; that is, from 440 to 530 gallons per English acre. Having determined on visiting Ay, M. Ruinart gave me a letter to to his manager, but he said he expected him next day at Rheims, and would give him full instructions on seeing him.

Thursday, 22nd December.—At six o'clock this morning I joined the voiture for Epernay, where I arrived at eleven o'clock. After breakfast I immediately proceeded to Ay, intending to return the next day also to meet the agent of M. Ruinart, should I not be satisfied with the information I might procure in his absence. Ay is a small town on the right bank of the river Marne, a little higher up than Epernay, which is situated on the left bank. On both sides of the river there is a range of chalky hills, but separated also by a very beautiful meadow about a mile in width. These hills are of no great elevation, and are more or less steep, but in no place is the soil required to be supported by terraces. The range of hills above the town of Ay is ex-

posed to the full south, except where the exposure is varied by recesses in the range; it consequently produces wine of the finest quality, and very superior to that of Epernay, which is produced on hills exposed to the north. I walked through the meadow with great difficulty and labour, the road being almost impassable in some places, owing to the depth of the mud. On arriving at Ay, I delivered my letter to Madam Hazart, the wife of M. Ruinart's manager, and expressed my doubts whether I should return the next day. She immediately called the *maître vigneron* to proceed with me to the vineyard, and another to obtain the plants which the letter expressed my wish to procure. The depth of soil before reaching the chalk on the hill of Ay, is in most places, according to the report of the vigneron, 10 to 15 feet, nor is he aware of any difference being occasioned in the quality of the wine when the chalk comes nearer the surface, which happens a little farther to the east, where they also make wines of the first quality. The soil is strongly calcareous, full of small pieces of chalk, and of stones. Near the top of the hill the soil is more argillaceous and stronger than towards the bottom; and this, in some degree, affects the quality of the wine, but not in a great degree. The great difference is caused by difference in exposure, that to the south producing uniformly the best; where the soil is the same from the top to the bottom, the middle region of the hill is still the most valuable, for it is less subject to the injuries which early frosts frequently occasion in the lower region, and enjoys in general a warmer sun, especially towards the close of the season, than the top. When the season has been extremely fine and warm from beginning to end, the wine of the higher and lower regions of the hill equals that of the middle

region. If I was struck with the closeness of the plants in Burgundy, the closeness of these was more remarkable still. The vigneron said, that if it were possible to keep the vineyard fully furnished with plants, there would be one for each 8 or 9 inches in length, by 6 or 7 in breadth. The supposition which I made to illustrate the mode of *provignage* in Burgundy is actually realised here. Every year an addition is made to the bottom of the vineyard of a certain number of plants, and the whole of the vines are in a state of continual progression, being buried, and by that means carried 12 or 14 inches up the hill every third year. The process is of course not regular, for in every place there are plants in each stage of the progress which they pass through. According to the number of the voids to be filled, the branches of the stock that is buried are from two to four or five. On each of these branches, when pruned in the spring, are left two buds; these buds produce branches or shoots, which bear fruit the first year. The next spring three buds are left upon the higher, and two upon the lower of the two shoots, and the spring following they are pruned to bear shoots corresponding to the number of voids to be filled in their neighbourhood, for their turn to be buried has again arrived. By this means also a supply of rooted plants is obtained when they are required; but when these rooted plants are cut off, and planted out, they never bear fruit till the third year. The *maître vigneron* said, he believed the roots never die. They frequently trace them to a very great length, but never disturb them, always burying the others above them. The produce per arpent, he says, sometimes amounts to 15 pieces (660 gallons per acre), and the small proprietors, who manure their vines more strongly, have frequently 16. M. Ruinart himself told

me, that he knew instances of four arpents giving 100 pieces, 1,100 gallons per acre. The manure is always added to the plants which have been buried; a handful of earth is first put over the plant, and the manure above. They are, however, extremely cautious as to the quality of the manure. In some places I observed dung from the farm-yard mixed with soil, but in general it was only strong soil from the valley below, mixed with ashes, and other amendments of a mild description.

I here closed my examination of the vineyards of France, there being no point unexplained of sufficient importance to induce me to wait another day for the purpose of seeing M. Ruinart's steward. Next morning the *maître vigneron* brought me three small bundles of plants, which he said were the only varieties cultivated in the vineyards which produce good wine. The black and white *Pineau*, according to M. Ruinart's statement, and as is generally understood, are the varieties of vines cultivated in Champagne, as well as in Burgundy. The vigneron brought me two black varieties, which he called the *plant vert*, and *plant dore*, and one white. The *plant dore*, he said, was introduced into the vineyards of M. Ruinart only a few years ago, and was not common in the country. It is much more productive than the other two varieties. These plants were all rooted, having been cut from stocks that had been buried the preceding season; they had each two branches, and are sold in the country at the rate of a halfpenny each. These plants were very abundant this season, for a vast number had been destroyed by the severity of the winter 1829-30, and it was necessary to provide plants to replace them. To such an extent were the vineyards injured during that season, that in some places the quantity of wine produced did not

exceed from 2 to 3 pieces per arpent. With such difficulties to overcome, the vineyards of Champagne and Burgundy are striking examples of the effects of industry and skill. Nothing can contrast more strongly than the small and puny shoots of the vines of Champagne and Burgundy, compared with the strong and vigorous branches of the vines of Spain; yet have the care and skill of the cultivators produced in the former countries a wine equal in value to the best of those produced in the most favoured climates, and, notwithstanding all their losses, much more abundant in quantity.

Having recorded with so much minuteness my observations on every vineyard and district through which I passed, I will avoid adding to the length of this journal by offering many general remarks. I cannot, however, refrain from observing, that from the albarizas of Xeres, the most southern vineyards of any reputation in Europe, to those of the chalky hills of Champagne,—amongst the most northern,—I met with no vineyard producing dry wines of reputation, which was not, more or less, calcareous. Although it is acknowledged that two-thirds of the vineyards of France are situated upon soil more or less calcareous, by Chaptal, and other writers upon the subject, they have stated, that provided the soil is porous, free, and light, its component parts are of little consequence; and they enumerate granitic, schistose, argillaceous, flinty, sandy, and calcareous soils, as equally well qualified to produce, and as actually producing, in different parts of France, wines of the finest quality. It appears evident to me, however, that these writers have in many instances been misled by the representations which have been transmitted to them. As for instance,

when Chaptal and Cavoleau* cite the wine of Hermitage as an instance of the excellence of wines produced upon the *debris* of granite; while the fact is, that the wine of the hill of Hermitage owes its superiority over the wines of the other hills in its neighbourhood only to the circumstance of the granitic soil of a part of that hill being mixed with calcareous matter; and but for this circumstance, I am satisfied that the wine of Hermitage would never have been heard of beyond the neighbourhood where it grows. I am therefore of opinion, that the finest dry wines owe their superiority chiefly to the quality of the soil; and I am much mistaken if it be not found that the soils of all vineyards producing dry wines of superior excellence are strongly calcareous. All my observations have led me to this conclusion, and I know of no instance to the contrary. It will be observed, that I here only speak of dry wines, for sweet wines of great excellence are produced in a variety of soils, and, in fact, owe their qualities more to the variety of the grape, and the manner in which it is treated, than to the soil. The sweet *Muscat* and *Old Mountain* wines of Malaga are celebrated all over the world; but though they have the same varieties of vines at Malaga as at Xeres de la Frontera, and pursue a similar practice in making the wine, the best of their dry wines, produced on a soil consisting of decomposed slaty schist, are insipid and flavourless when compared with the Sherries which are produced on the chalky hills of Xeres. The sweet wine of Rivesaltes, the most celebrated in France, is produced on a granitic soil covered with pebbles; and the sweet

* *Cœnologie Française, ou Statistique de Tous les Vignobles de France.*—Paris, 1827.

wines of Cosperon and Collioure, in the same department, are produced on hills of schist, as nearly as possible resembling those of Malaga. But though the dry wines of both these soils are well known, they are not distinguished for their fineness or flavour. Their excellencies are their strength and rich colour, which make them valuable for mixing with the weak and light-coloured wines of the ordinary growths of Burgundy and Maçon, which supply the chief consumption of Paris.

The limited extent of the first-rate vineyards is proverbial, and writers upon the subject have almost universally concluded that it is in vain to attempt accounting for the amazing differences which are frequently observed in the produce of vineyards similar in soil, and in every other respect, and separated from each other only by a fence, or a footpath. My own observations have led me to believe, that there is more of quackery than of truth in this. In all those districts which produce wines of high reputation, some few individuals have seen the advantage of selecting a particular variety of grape, and of managing its culture so as to bring it to the highest state of perfection of which it is capable. The same care has been extended to the making, and subsequent management of their wine, by seizing the most favourable moment for the vintage—by the rapidity with which the grapes are gathered and pressed, so that the whole contents of each vat may be exactly in the same state, and a simultaneous and equal fermentation be secured throughout—by exercising equal discrimination and care in the time and manner of drawing off the wine, and in its subsequent treatment in the vats or casks where it is kept—and lastly, by not selling the wine till it should have acquired all the perfection which it could acquire

from age, and by selling, as the produce of their own vineyards, only such vintages as were calculated to acquire or maintain its celebrity. By these means have the vineyards of a few individuals acquired a reputation which has enabled the proprietors to command almost their own prices for their wines; and it was evidently the interest of such persons that the excellence of their wines should be imputed to a peculiarity in the soil, rather than to a system of management which others might imitate. It is evident, however, that for all this a command of capital is required, which is not often found among proprietors of vineyards; and to this cause, more than to any other, it is undoubtedly to be traced, that a few celebrated properties have acquired, and maintained, almost a monopoly in the production of fine wines.

On my arrival at Paris, I waited upon the Director of the Royal Nursery of the Luxembourg, and inquired whether I could get the deficiencies supplied in my list of vines procured at Montpellier. He replied, certainly; there would be no difficulty in the matter, for any plant could be procured from the nursery at a regulated price. That for vine cuttings was two francs and a half per hundred. I therefore delivered him my list, with the deficiencies marked, to the number of 133, and of these 110 were supplied, two plants each. I here also procured six cuttings each, of sixteen of the most valued varieties of vines which are cultivated in those provinces which I did not myself visit; and after very considerable difficulty, I obtained a copy of the printed catalogue of the Royal Nursery of the Luxembourg, including a list of the collection of vines.

APPENDIX.

ON my arrival in London, having heard that several convict ships were on the point of sailing, I lost no time in addressing to the Principal Secretary of State for the Colonies, the following letter:—

(COPY.)

London, 6th January, 1832.

“MY LORD,

“Having occupied myself a good deal during my residence in New South Wales, in endeavouring to promote the plantation of vineyards, and the making of wine in that Colony, I could not allow the opportunity afforded by my visit to Europe to pass, without attempting to ascertain to what peculiarities of climate, soil, or culture, the most celebrated wine provinces are indebted for the excellence of their respective products; and to make a collection of the different varieties of vines cultivated in each. I have just returned to England after an absence of four months spent in pursuit of these objects in France and Spain, and the results of my journey have fully satisfied me that the opinion I have always entertained of their great importance was not exaggerated.

“My reason for troubling your Lordship on this subject, however, is the following:—

“I had the good fortune to find in the Botanic Garden at Montpellier, a collection of most of the varieties of vines cultivated in France, and in some other parts of Europe, to the number of 437, and, on application to the Professor of Botany, he (with the greatest liberality) permitted me to take cuttings from the whole. I afterwards added to this collection 133 from the Royal Nursery of the Luxembourg at Paris, making in the whole 570 varieties of vines, of all of which, with two or three exceptions, I obtained two cuttings*.

“It is my wish to place this collection of vines at the disposal of His

* There was an error in this, as will be seen from page 134. The Director of the garden did not tell me that he had not been able to supply the *whole* deficiency, and it was not discovered, till after they were unpacked at Kew, that only 110 had been supplied.

Majesty's Government, for the purpose, should it be deemed expedient, of forming an Experimental Garden at Sydney, to prove their different qualities, and propagate, for general distribution, those which may appear most suitable to the climate.

"As independently of the above, I have secured a competent quantity of all the most valuable varieties which I found cultivated in the best wine districts of France and Spain, both for wine and raisins, it might at first sight appear superfluous to bestow attention on a collection which must include many of a very inferior description; but it is, perhaps, the most remarkable fact connected with the culture of the vine, that even a slight change of climate or soil produces a most material change in the qualities of its produce; and for this reason the best varieties of France and Spain may prove (as several of them have already proved) of no value in New South Wales, while, on the other hand, the most indifferent kinds may produce in that climate the most valuable wines.

"For this reason I am of opinion that the establishment of an Experimental Garden at Sydney could not fail to be of the highest value to the Colonies of New South Wales and Van Diemen's Land, and subsequently to that of the Cape of Good Hope also; while at the same time, being placed under the care of the superintendent of the Government Garden, adjoining which there is abundance of vacant ground, it would add little to the present expense of that establishment.

"It is my intention also to place a part of the collection I have made in the different parts of France and Spain, which I have visited, in the Public Garden, to be propagated for general distribution. I trust I may, therefore, be excused for requesting that your Lordship will give orders that the cases containing these plants (those from France being now in London, and those from Spain being expected by the first arrivals from Cadiz and Malaga) may be received on board any of the convict ships about to sail, in order to secure their early and safe arrival in the Colony.

"I have the honour to be,

MY LORD.

"Your Lordship's most obedient humble Servant,

"JAMES BUSBY."

"*The Right Honourable Lord Goderich,*
His Majesty's Principal Secretary
of State for the Colonies, &c. &c. &c." }

The accommodation I requested having been immediately ordered, I set about having the plants transferred to more substantial packages, and packed in sand and earth, in order to enable them to sustain the vegetation which would result from the hot weather in passing the

tropics*. By the invitation of Mr. Richard Cunningham, then of the Royal Gardens of Kew, and since, fortunately for the Colony, appointed Colonial Botanist of New South Wales, I transferred the cases to Kew, where Mr. Cunningham himself superintended their packing, and I feel persuaded that to his care I am, in a great measure, indebted for the excellent condition in which they arrived at Sydney. Mr. Cunningham also found the cuttings sufficiently long to afford a short cutting from each. These he took the trouble to plant out in open boxes, and before leaving England he had shipped them on board the Camden convict ship for Sydney, in such excellent condition, that he expresses himself as having no doubt of their safe arrival; and he is also confident that the deficiencies in the first importation may be made good from them. Should Mr. Cunningham's anticipations in this respect be realised, I will have the satisfaction of having transferred to the Colony, without any expense to the public, and almost in a complete state, a national collection of vines, which it was for three-quarters of a century the favourite project of writers on Agriculture, and Agricultural Societies in France, to collect, and which was at length accomplished at a very considerable expense to the country, by the Count de Chaptal, when Minister of the Interior under Buonaparte.

My worthy friends in Malaga and Xeres de la Frontera, did not neglect the commissions they had undertaken,

* I beg here to mention, that I communicated to several of the most eminent Horticulturists and Botanists, in London and Edinburgh, Messrs. Audibert's plan of packing plants in cases lined with oiled paper (see page 75), to all of whom the plan was entirely new, and all of whom acknowledged it to be a valuable communication. The success which attended it in the case of these vine cuttings is decisive in its favour.

and I received in London three cases of vines from Malaga, and one case from Xeres de la Frontera; but these arrived at too late a period to be sent to the Colony in close cases, and it therefore became necessary to establish them in open boxes. Mr. Cunningham undertook this labour also, and a portion of each variety of the Spanish vines are now also on their way to the Colony with the others on board the Camden.

Of the following catalogue of vines, amounting to 75 varieties, 52 were actually collected from the vineyards I myself visited in the various provinces of France through which my route lay. Of each of these I procured from 10 to 20 cuttings, and I am happy to say that not one of the varieties is lost. Of the five varieties procured in the more northern climates of Burgundy and Champagne, as well as of the 15 varieties procured at Paris, many of the cuttings are dead, and one of the latter varieties is entirely lost. But of the 47 varieties procured from the warmer climates of the south, not 10 cuttings out of from 500 to 600, have failed. The rest, with few exceptions, are at this date (22nd January, 1833) in the highest state of health and vigour; and it is but justice to Mr. M'Lean, of the Botanic Garden, under whose care they have remained since their arrival, to acknowledge the zeal and attention with which he has acquitted himself of the charge.

CATALOGUE FIRST.

[The vines in this Catalogue are arranged in the order in which they were received by Mr. Busby, and described to him, with the exception of eight varieties of rooted plants at the end of the list.]

*Vines of Rousillon, from the Vineyards of M. Durand,
of Perpignan.*

- No. 1. CARIGNAN,—*Crignane* Cavoleau,—black, with a thick skin, deeply coloured, yields largely. This grape by itself would produce a dry wine. Cavoleau says of this grape, that it is rich in saccharine matter, although harsh to the taste, and very mucilaginous.
- No. 2. GRENACHE—black, skin very thick, but yielding less colour than that of the preceding. This grape by itself would yield a sweet wine. Cavoleau adds of this grape, that it is rich in saccharine matter, and strongly impregnated with aroma.
- 3. MATARO—black, skin less thick, but yielding a good deal of colour. This grape yields the most abundantly, and of itself would give a dry wine. Cavoleau observes, that this is the only vine of the province that yields annual, and almost equal, vintages; the other varieties sometimes yield abundantly, but their produce is uncertain.

NOTE.—The above three varieties are, in general, equally distributed in the vineyards of the department of Pyrenees Orientales, and furnish the wine of exportation known by the name of *Vin de Rousillon*.

- No. 4. MOURASTELL—black. This variety differs very little from the *Mataro*, but the grapes are rather smaller.
- 5. ST. ANTOINE—black ; the grape very large. It is a very good eating grape, although the skin is rather strong. The wine made from this grape by itself has a very agreeable flavour, but it yields very little.
- 6. BLANQUETTE—white, thin-skinned, of a very good flavour, yielding a *heady* white wine, which is employed in giving strength to the light white wines of Languedoc.
- 7. MUSCAT, a strongly flavoured white grape—excellent for eating—yields little, and arrives early at maturity.
- 8. PIQUE-POULLE, a pink-coloured grape—very fine skinned, and excellent for eating. It yields a light coloured wine (*clairer*) of agreeable flavour. Cavoleau says, that the wine of this grape is distinguished for its agreeable *bouquet*.
- 9. HERMITAGE. This variety was brought to Rousillon some years ago by M. Durand, from the celebrated vineyards of Hermitage, on the banks of the Rhone. It yields little, but the flavour of its produce is excellent. The wine made from this grape in Rousillon, has less “*finesse*,” but more strength than in its original soil.
- 10. The vines in this bundle were obtained at Collioure, about 30 miles south-east of Perpignan, and the bundle originally contained four varieties: viz.—PANSE, 10 cuttings; PAMPANELLE, 6 cuttings; PIQUE POULLE NOIR, 5 cuttings; GRÉNACHE BLANCHE, 3 cuttings. But these descrip-

tions were unfortunately mixed, and the bundle reduced to 12 in all. The descriptions given of the different varieties at Collioure were as follows:—

- No. 10-1. PANSE—white—the bunches very large and long—the berries also large and long—produces plentifully—the flavour resembles the Muscat. It is good both for wine, and for eating—ripens rather early, and is a scarce variety in that district.
- 10-2. PAMPANELLE—black, a very delicious grape, but very tender. It produces abundantly, but is destroyed in such quantities by the bees, that there is seldom much fruit gathered. It also decays easily after rain.
- 10-3. PIQUE POULLE NOIR—black. This variety of the pique poulle does not produce much, excepting in very favourable seasons. It yields a light wine, which is very early fit for use.
- 10-4. GRENACHE BLANCHE—white. This variety of the *grenache* is only used in the district of Collioure to hang up for winter provision of grapes. It produces plentifully—the bunches large—the skin very tough, and it has always a bitter taste.

The four following varieties are from Rivesaltes, famous for the sweet wine produced there, which bears the highest reputation of any *Vin de Liqueur* in France.

- 11. MACABEO—white. This variety of itself yields a sweet wine, almost equal to the Muscat. The bunches are large, and keep well when suspended for winter provision. Cavoleau observes, that small quantities of Macabeo wine are made by private families for domestic consumption, but it is never found in commerce.

No. 12. **MUSCAT.** This is the grape which is chiefly employed in making the celebrated sweet wine of Rivesaltes. According to the statement made by the vigneron, from whom the cuttings were procured, 500 stocks yield 200 bottles of wine. Cavo-
leau observes, that there are three varieties of the Muscat employed in making the wine of Rivesaltes; viz.—“The Muscat of Alexandria—the *round white* Muscat, and particularly the St. Jacques.” It is not ascertained to which of these descriptions this variety belongs.

- 13. } **GRENACHE BLANCHE.** This variety is described under No. 10.
 } **PIQUE POULLE NOIR.** This variety is also described under No. 10.

One of these two varieties was joined with the bundle of Collioure vines (No. 10), but I find I have not noted which of the two,

The following 25 varieties (from 14 to 38, inclusive) are from the vineyards in the neighbourhood of Montpellier, in the department of Herault, formerly Languedoc.

Cavoleau does not notice the varieties of vines cultivated in this department, which is not celebrated for the qualities of its wine in general, although it produces the famous Muscat wines of Frontignan and Lunel. Of 45,000,000 gallons of wine annually produced in the department of Herault, 28,100,000 are converted into brandy or spirits of wine.

- 14. **AYADE**—white—yields well, and is good both for eating and for wine.
 — 15. **MOURASTELL**—black. A very good grape, came originally from Perpignan. See No. 4.
 — 16. **AYADE NOIR**—black. Produces plentifully, and is good for making brandy.

- No. 17. CALIGNAN—black. This is the best variety for making brandy ; it yields well.
- 18. RAMONEN—black. Yields largely, and is also suitable for distillation.
- 19. TERRET—black. Yields well, and is also suitable for brandy.
- 20. FONTAINBLEAU. An excellent eating grape, and ripens very early.
- 21. ESPAR—white. This variety is good for brandy, but does not yield much.
- 22. CHASSELAS—white. This is an eating grape, but also yields a good white wine.
- 23. UGNE—white. Makes a good white wine—ripens early.
- 24. MUSCAT—black. Yields well, and is good for brandy.
- 25. MADELEINE—white. Ripens very early, but is not good, either for wine or brandy.
- 26. CORINTH—black. Is excellent both for wine and brandy, and yields well.
- 27. TERRET BOURRET. Yields very well, and is excellent for distillation.
- 28. ASPIRANT VERDAL. Produces largely, and yields a fine wine.
- 29. OLIVETTE. A very large white grape, good both for wine and brandy. It is also put into brandy to give it a flavour—it yields well.
- 30. CLAIRETTE DE LIMOUSIN. Produces abundantly, and yields a peculiar and excellent white wine.
- 31. MERVEILLE—black. Yields well, and is good for brandy.
- 32. ASPIRANT—black. Yields largely—is excellent

- for eating, and makes good wine, but is worth nothing for brandy.
- No. 33. **ESPAR NOIR**—black. Yields well, and is good for making brandy.
- 34. **PIQUE POULLE GRIS**—grey. Is good for wine and brandy.
- 35. **MUSCAT**—white. Is good for eating, for wine, and for brandy.
- 36. **BOIS-DUR**—black. Yields well, is good for brandy.
- 37. **CINQUE SAUT**. Yields well—produces excellent wine, and is also good for eating, and for brandy.
- 38. **ARAMON**—black. Yields well, is good for brandy, but not for wine.

The following 6 varieties are from Roquevaire, the district in which most of the raisins and other dried fruits of Provence are prepared.—Roquevaire is about 12 or 14 miles east from Marseilles. Cavoleau does not notice the qualities of the vines of this department.

- 39. **PANSE OR PASSE**—white. This is the grape with which the best raisins of Provence are made. The bunches are large, the skin of the berry is tender. M. Negrel Ferand* says, that “this is a very strong and vigorous vine, which requires a rich soil to give it all the development of which it is capable. Placed in these circumstances, it produces abundance of grapes of an extraordinary largeness, which are excellent both for eating and to preserve for the winter. It vegetates very early, requires to be pruned rather long, and succeeds perfectly in the trellis.”

* STATISTIQUE DES BOUCHES DU RHONE. Marseilles, 1831-2.

- No. 40. **ARIGNAN**—white. This grape is also dried for raisins, but being much smaller than the Panse, the raisins bring a third less in the market. According to Negrel Ferand, it is an ancient vine, and yields a very sugary grape when cultivated on light dry soils. It is mixed in the proportion of a tenth with the Muscat grape to make the Muscat wine, and when employed alone, it yields a wine which, if properly treated, froths very well.
- 41. **PASCAL**—white. This grape is used in making white wine. According to Negrel Ferand, it is cultivated to a great extent in consequence of its abundant produce, and is good both for eating, and for white wine.
- 42. **PANSE MUSQUEE**. This variety is said to be the same as the Muscat of Alexandria. It is seldom preserved for raisins in Provence, as they find it difficult to dry owing to the thickness of its skin. Negrel Ferand says, that though less cultivated than the common Panse, it is more worthy of attention, only that it frequently blights in flowering. The remedy which he suggests for this is to prune it long. He adds, that if cultivated with care, its raisins would rival the best raisins of Malaga; but it is questionable, whether the degree of heat at Roquevaire is sufficient to dry it perfectly.
- 43. **BOUTEILLANT**—black. This variety yields very largely, and is considered the most advantageous for making wine in the district, as far as quantity is considered. According to Negrel Ferand, it is a strong and vigorous vine, which yields abund-

ance of large bunches of large grapes, but the wine, though abundant, is weak, and has little colour.

- No. 44. **BRUNFOURCAT.** This grape yields the best wine of the district, but in less quantity than the above. According to Negrel Ferand, it came originally from Bourdeaux, and yields an excellent wine when cultivated in a light soil, on the slope of a hill.

The following three varieties are from the Hill of Hermitage, and are the varieties exclusively cultivated in the best vineyards.

- 45. **CIRAS**—Cavoleau, **SCYRAS.** This variety is alone used in making the best red wines of Hermitage. Cavoleau mentions a tradition which exists in the neighbourhood, that this variety was originally brought from Shiraz, in Persia, by one of the Hermits, who resided in the Hermitage, of which the ruins still exist on the Hill where the celebrated wine of that name is produced.
- 46. **ROUSSETTE**—Cavoleau, **ROUSSANNE.** This variety yields by itself a dry spirituous wine, and is not very productive.
- 47. **MARSAN**—white. This variety by itself yields a sweet wine mixed with the Roussette, it produces the best white wines of Hermitage.

The two following varieties are vines of Burgundy, from the Clos Vougeot.

- 48. **PINEAU BLANC**, or **CHAUDENY**—white. Produces indifferently; is the only variety of white grape cultivated in the best vineyards.

No. 49. PINEAU NOIR—black. Produces rather more plentifully than the preceding, but still indifferently. This and the above are the only varieties cultivated in the Clos Vougeot, and other vineyards of celebrity, and this is alone used in making the best red wine of Burgundy.

The three following are vines of Champagne from the Hill of Aÿ.

- **50. PINEAU DORE—black.** This variety was introduced into his vineyards at Aÿ, by M. Ruinart, of Rheims, some years ago, and is still confined to some of the best vineyards. It is much more productive than the other varieties of the Pineau.
- **51. PINEAU VERT—black.** The variety most commonly cultivated in Champagne.
- **52. PLANT BLANC, or WHITE PINEAU.** This variety and the two preceding are exclusively cultivated in the vineyards, which produce the wines of Champagne of the first quality.

The above complete the collection made in the districts I myself visited. The following 14 varieties (from 53 to 66 inclusive) were procured (six of each) from the Nursery of the Luxembourg at Paris. They are particularised by Cavo-
leau, as the most valuable in their respective districts, and the following account of them is taken entirely from his work.

- **53. COULANGES DE L'YONNE—black.** This is a variety of the Pineau, of which Bosc has enumerated 22 varieties. The two varieties which people the best vineyards of Burgundy and Champagne, are well known. This variety and the following, which is also a Pineau, are pointed out by Cavo-
leau as particularly worthy of notice from being very productive. The Coulanges yields a very

good wine in the department of L'Yonne, and produces double the quantity of the Pineau of Burgundy and Champagne.

- No. 54. LIVERDUN—DE LA MEURTHE—black. This variety has been lately propagated to a great extent in the department of La Meurthe. It yields a wine which will keep 10 years in the cask, and is so prodigiously fertile that in the worst years it yields more than double the average produce of other vines, and in abundant seasons the produce sometimes amounts to 200 hectolitres per hectare; about 2,500 gallons an acre.
- 55. CARBENET, or CARMENET A PETITS GRAINS—DE LA GIRONDE—black. This variety, and the three following, are almost exclusively cultivated in the vineyards of Medoc, and the *Carbenet a petits grains*, and *Carbenet Sauvignen*, are alone to be found in those of highest reputation.
- 56. CARBENET SAUVIGNEN—black. See 55.
- 57. MALBEK—black. See 55.
- 58. VERDOT—black. See 55.
- 59. SAUVIGNEN—white. De la Gironde. This and the six following varieties are cultivated in the vineyards, which yield the best white wines of this department, including *Vin de Grave*, *Barsac*, and *Sauterne*.
- 60. SEMILION—white. It is recommended that this variety should occupy a proportion of two thirds of the vineyards in which the other five varieties are cultivated.
- 61. ROCHALIN—white. See 59.
- 62. BLANC-DOUX—white. See 59.
- 63. PRUNERAS—white. See 59.

- No. 64. MUSCADE—black. See 59.
- 65. VERDET—white. See 59. This variety was also called *Grose Guillaume*, by the gardeners at the Luxemburg.
- 66. FOLLE BLANCHE—DE LA CHARENTE—This is the variety of vine which yields the brandies of Cognac. There are three varieties called *Folle*, the white, the yellow, and the green; the two former are superior to the third.
-

The following were rooted plants from the nursery of Messrs. Audibert Freres, of Tonelle, near Tarascon, in the Department of Bouches du Rhone.

- 67. RAISIN MONSTREUX, of Decandolle. Qualities not known.
- 68. MOUNESTIN—round, black. Fine bunches, yields well, is good both for eating and for wine.
- 69. MUSCAT VIOLET. A good eating grape, and also for Muscat wine.
- 70. RAISIN DE DAMES—white. A most delicious eating grape, and keeps well for winter provision.
- 71. ISABELLE, an American grape, black, with a flavour of the raspberry.
- 72. MUSCAT NOIR—black. Good for eating, and for wine.
- 73. VINE OF UPPER EGYPT. A very deep coloured grape, yielding a very dark purple juice.
- 74. CORNICHON. This variety was one of four, procured in the Garden of Montpellier, but not belonging to the Luxembourg collection, the other three are dead. This, I think, is a very curious and beautifully variegated grape.

CATALOGUE SECOND.

SPANISH VARIETIES.—The first seven numbers are those cultivated in the vineyards in the neighbourhood of Xeres de la Frontera, producing Sherry wines. Although the bundles of each variety were tied up separately, unfortunately no tickets were attached to identify them. It is hoped, however, that the following very full descriptions, which are taken for that purpose, from the work of Simon Roxas Clemente, will make this no difficult task after they have borne fruit; and they will serve, at the same time, as specimens of a mode of description which may perhaps be turned to future advantage*.

No. 1. PEDRO XIMENES.

DESCRIPTION.

STOCK, large; bark, adhering loosely.

BRANCHES, rather numerous, of middling length, or rather short; thickness, middling.

Colour, reddish grey, soft, the distance between the knots, middling.

SECONDARY BRANCHES, abundant, with enough of dwarf bunches (*Grapillons*).

BUDS, large, very pointed.

LEAVES, of middling size, sometimes rather small, rather irregular, slightly lobed, downy on the underside, smooth above, slightly attached, edges indented, with rather short indentations, the footstalk is almost

* In the work of Simon Roxas Clemente, upon the varieties of vines cultivated in Andalusia, there are similar descriptions of 120 varieties.

perpendicular to the leaf, and the bases of the nerves are red.

BUNCHES, pretty numerous, of middling size, of a cylindric and conic shape, with some small grapes, which, however, all ripen, stalks tender.

BERRIES, $5\frac{1}{2}$ lines (twelfth parts of an inch) in length, 5 in thickness, very obtuse, the colour white, rather gilded (*doré*), rather transparent, easily separate from the stalk, soft, not fleshy, extremely sweet, skin very fine, ripen very early, the ring round the insertion of the stalk simple, with 5, and rarely 4 angles, bright grey.

OBSERVATIONS.

The specific gravity of the *must* of this grape was, on the 15th September, at San Lucar, after two days' exposure to the sun before pressing, $12\frac{1}{2}$ degrees of the hydrometric of Baume, which is equal 1.092; and at Paxarete, on the 2nd of October, its *must*, after four days' exposure, weighed 16 degrees, or 1.121.

This grape rots more readily than any other variety, as it is much attacked by bees and wasps, in consequence of its extreme sweetness, and the fineness of its skin. Its *must* is considered the most precious either for sweet or dry wines, and it enters largely into the composition of all the most valuable wines of the south of Spain. It is not esteemed for brandy.

This variety is said to have been originally transplanted from Madeira and the Canaries to the banks of the Rhine and the Moselle, and thence by Pedro Ximenes to Malaga, about two centuries ago. At Malaga and Grenada one half of the plants in the vineyards consist of this variety; at Xeres, one-eighth; at Motril, four-fifths; at Paxarete, one-fourth.

No. 2. MUSCATEL MENUDO BLANCO. (Small white.)

DESCRIPTION.

STOCK, small, buds very early.

BRANCHES, rather numerous, prostrate, very unequal in length, weak, round, entirely naked, bright reddish grey, very soft, distance between the knots rather long, very few small bunches (*Grapillons*), tendrils opposite to the leaves and branchy.

LEAVES, rather small, rather irregular, entire, or nearly so, shining, green inclining to yellow, but rather deep in the upper side, somewhat downy, indentations rather short, stalk smooth, and of a bright red, generally forming an acute angle with the leaf.

BUNCHES, few, small, oval and cylindric, very compact, ripens throughout, stalk rather woody.

BERRIES, small, almost equal, very obtuse, rather hard, rather fleshy, of an insipid sweet taste, ripen very early, easily rot, skin rather thick, without any ring where the stalk is inserted.

No. 3. MANTUO CASTILLAN.

DESCRIPTION.

STOCK, trunk large, head large, bark rather thin.

BRANCHES, not so numerous as those of the preceding, partly prostrate, and partly straight, long, rather small, round, of a clear reddish grey colour in the under part, and the under part white, spotted with red, distance between the knots, long, very few dwarf bunches, buds rather pointed.

LEAVES, middling size, the lower ones large, rather irregular, almost entire, shrivelled, very cottony on the under side, the cotton white, and adhering strongly.

Before the maturity of the fruit the larger leaves take a yellow colour, the stalk a clear red, and almost at right angles to the leaf.

BUNCHES, rather large, stalk flexible.

BERRIES, 9 lines long, and $8\frac{1}{2}$ thick, fleshy, very savoury, the veins apparent, the skin fine, the ring circular, and decidedly marked of a clear grey, and sometimes with 5 angles, and of a deep reddish grey, commonly rather slender towards the point.

The *must* of this grape marked at San Lucar on the 15th of Sept. 9 degrees, and on the 19th of the same month, $9\frac{3}{4}$ degrees of Baume's hydrometer, or 1.064 and 1.069. This grape bursts and rots if exposed to rain after it is ripe. At Xeres it is chiefly cultivated in the sandy soils, and is more valued as an eating grape than for wine. It is also hung up to keep for winter provision.

No. 4. UVA DE REY. (White.)

DESCRIPTION.

STOCK, large.

BRANCHES, few, horizontal, middling or rather small, round, reddish grey, rather bright, very few dwarf branches, few secondary branches.

LEAVES, rather small, rather irregular, generally entire, sometimes very slightly lobed, rather bright on the upper side; the other side entirely naked, indentations rather short, stalk naked, rather a bright red, almost at right angles with the leaf.

BUNCHES, large, irregular, composed of small compound bunches, in the upper part of the bunch, and simple bunches towards the end, very few small berries,

which all ripen, stalk long, of middling thickness, tender, greenish.

BERRIES, white, rather hard, an inch long, by 10 lines in thickness, very unequal, very obtuse, very transparent, not fleshy, sweet, but rather harsh or rough, skin very fine, ring strongly marked.

No. 5. MOLLAR. (Black.)

DESCRIPTION.

STOCK, middling, buds in the ordinary time.

BRANCHES, numerous, prostrate, long, rather slender, round, of a deep reddish grey colour, distance between the buds, middling, very few dwarf bunches.

LEAVES, with extremely short indentations, rather shrivelled, reddish at their first developement, and afterwards of a very yellowish green, and rather shining; they become reddish before their fall, the under surface covered with a very adhesive white cotton; the stalk either naked or very slightly downy, of a reddish colour, and at rather an acute angle with the leaf.

BUNCHES, rather large, a little irregular, with compound bunches in the upper part of the bunch, and simple bunches near the end; very few small berries, generally all the berries ripen equally, but sometimes a part remain green, the stalk long, slender and brittle.

BERRIES, eight lines in length and $8\frac{1}{2}$ in thickness, rather unequal, very obtuse, not fleshy, the skin fine, the ring scarcely observable, colour blackish grey, ripen early.

The *must* of this grape weighed at San Lucar, on the 15th September, 9 degrees of Baume, or 1.064; on the

30th of the same month, at Paxarete, 12 degrees, or 1·089.

At Xeres, it is planted in the proportion of one third in the vineyards of the *arenas*. At Arcos, Espera, and Paxarete, it occupies four-fifths of the vineyards.

No. 6. MOSCATEL GORDO BLANCO. (Large White.)

DESCRIPTION.

This variety differs from the small Muscat, by the great size of the stock ; by its branches, which are also thicker, and of a yellow reed-like colour. By its berries, which are a little gilded, and of 11 lines in length, by $9\frac{1}{2}$ in thickness.

The *must* of this grape at Chipiona, weighed on the 15th September, after three days' exposure to the sun, 12 degrees, or 1·089. At Palmosa, on the 26th of the same month, it weighed 13 degrees, or 1·096. In October, 1808, it weighed 15 degrees, or 1·114.

This is the grape from which are made the best Malaga raisins.

No. 7. MACHAR NUDO.

This variety was furnished to my friend at Xeres, by Don Pedro Domecq, of Machar Nudo, as the most valuable grape which enters into the composition of sherry wine, but the former forgot its name. I have called it Machar Nudo, till it can be identified.

VARIETIES FROM MALAGA.

No. 8. MUSCATEL.

The same I believe as No. 6.

No. 9. PEDRO XIMENES.

I believe the same as No. 1.

No. 10. LARGA. (White.)

This variety is also employed at Malaga, and its environs, in making raisins. It is called Larga from its long shape, the berries being 10 lines in length, and only $6\frac{1}{2}$ in thickness. Its produce are called *Sun raisins*. It is a free bearer, and is said to make a good mixture with the Pedro Ximenes, for wine.

No. 11. JAEN. (White.)

This variety is cultivated in almost every Province in Spain, although Roxas Clemente considers it doubtful whether it is, in every place, the same variety which goes by that name. It is generally esteemed for making wine, and yields a large proportion of brandy. It is also used for *Lexia* raisins. It is very late in ripening.

No. 12. MARBELLI. (White.)

This is chiefly consumed as an eating grape. This name is not to be found in the collection of Roxas Clemente.

No. 13. CABRIEL. (Black.)

This is also an eating grape. Roxas Clemente observes, that the only time he ever found the full number of seeds assigned by botanists to the vine (viz. five) was in a grape of this variety.

No. 14. DORADILLO. (White.)

This grape is used for wine and for *Lexia* raisins. Roxas Clemente observes, that it bears a strong affinity to the Jaen; like it, it is late in bearing: it is mixed with the Pedro Ximenes at Malaga, in making a particular kind of wine.

No. 15. DON BUENO. (White.)

This variety is used only in making wine.

No. 16. TEMPRANA. (White.)

Roxas Clemente identifies this variety as the same with the common Listan and the white Palomino of Xeres.

The *must* of this grape weighed at San Lucar, on the 15th September, from 10 to 11 degrees, or 1·070 to 1·075; but the *must* of grapes of the same variety which had been three days exposed to the sun, weighed 15 degrees, or 1·114.

The same author says, it unites every desirable quality to furnish a good wine. At San Lucar, it occupies the proportion of nineteen-twentieths of the vineyards; it is also very extensively cultivated at Xeres and Port St. Mary's, and enters largely into the composition of the wines called Paxarete, Ximenes, Muscats, and Tintilla; although it is not a large grape it is also extensively cultivated for eating.

No. 17. LAYREN. (White.)

This is cultivated as an eating grape at Malaga. It is classed by Roxas Clemente as one of the Mantuo tribe.

Besides the vines described in the foregoing Catalogues, and those which are enumerated in the subsequent one, I was indebted to Mr. Allan Cunningham for procuring from the gardens of the Duke of Northumberland, at Sion House, 44 varieties of vines. But unfortunately less success has attended this, than any of the other importations. The only varieties of the 44 now alive being Warner's, Hambro', White Muscadine, Grecian Brick-coloured, Burgundy, and the Royal Muscadine.

CATALOGUE THIRD.

The following is the Catalogue of the National Collection of Vines in the Garden of the Luxemburg at Paris. They are arranged according to the colour of the grape, and its form. Of the 570 varieties which it comprises, 433 were obtained from the Botanic Garden of Montpellier, and 110 from the Garden of Luxemburg at Paris. After a careful examination, it has been ascertained that at this date (Jan. 22, 1833) 362 varieties are alive, and, for the most part, healthy. The rest are dead, but, as before stated, it is hoped their places will be supplied by the duplicates now on their way to the Colony. Of the 362 varieties, both cuttings of 157 are alive, and only one cutting of each of the remaining 205.

The Professor of Botany at Montpellier had been able to identify, or class, many of those varieties which are unnamed in the original Catalogue, and many of its voids are accordingly filled up in this. The varieties thus ascertained are distinguished by being inserted in italics.

VIGNES.

FRUITS NOIRS OVALES.

(*Black Oval-shaped Grapes.*)

* 1.^{re}

- | | |
|--------------|---------------------------|
| Plate-Bande. | 1. Maroquin, de l'Hérault |
| | 2. |
| | 3. |

* These numbers refer to their arrangement in the nursery of the Luxemburg.

- 1.^{re}
 Plate-Bande.
4. Carignan, de l'Hérault
 5. Merlé d'Espagne, Landes
 - 6.
 - 7.
 8. Pinneau de Coulanges, Yonne
 9. *Olivette blanche, de l'Hérault*
 - 10.
 - 11.
 12. *Pique pouille rouge, de l'Hérault*
 13. Boudalès, Hautes-Pyrénées
 14. Merbregie, Dordogne
 15. *Alicant, de l'Hérault*
 - 16.
 17. *Raisin noir, tres gros, murissant tres tard*
 - 18.
 19. Moutardier, Vaucluse
 20. Malaga, Lot
 - 21.
 - 22.
 23. Bourdelas, Jura
 24. Uliade rouge, de l'Hérault
 25. *Cinq saut, de l'Hérault*
 - 26.
 27. *Clairette rouge, de l'Hérault*
 - 28.
 29. *Plant de Pougealle noir*
 - 30.
 31. *Loge Vienne*
 - 32.
 33. *Grain de raisin Maroquin noir*
 34. Servent noir, de l'Hérault
 35. Plant de Malin, Côte d'Or
 36. *Morostelle*
 - 37.
 38. *Grain de raisin blanc. Ovale, de Divan*
- 2.^e
 Plate-Bande.
- 39.
 - 40.
 41. *Muscat d'Espagne de l'Hérault*
 42. Barbera noir, Pô
 43. Chaliane, Drôme
 44. Cargue-bas, Lot-et-Garonne
 - 45.
 46. Raisin perlé, Jura
 - 47.

- 2.^o
 Plate-Bande. 48.
 49. *Raisin Cornichon, Cazalix*
 50.
 51. Raisin rouge, Drôme
 52.
 53.
 54. Perlossette, Drôme
 55. Rochelle noir, Seine-et-Marne
 56. Pineau fleuri, Côte d'Or
 57.
 58.
 59.
 60.
 61.
 62.
 63. *Meunier, Environs de Paris*
 64. *Idem*
 65. *Meillet blanc, Environs de Paris*
 66. *Idem*
 67. Aspirant, de l'Hérault
 68. Bouteillant, Bouches-du-Rhône
 69. Brune, Maine-et-Loire
 70. *Noireau, Environs de Paris*
 71.
 72.
 73.
 74. Pineau noir, Vienne
 75. Charge-mulet, de l'Hérault
 3.
 Plate-Bande. 76. *Colonban, M. Audibert*
 77. *Aspiran noir, le vrai Audibert*
 78. *Ciotat raisin*
 79. *Verjus (douteux)*
 80. Teinturier, Vaucluse
 81. Soule-bouvier, de l'Hérault
 82. *Aramon noir*
 83. *Grognon noir*
 84. *Passadoule Bougie*
 85. *Plant de la barre*
 86. Rouge Espagnol, Landes
 87. *Ugne blanche*
 88. *Tokai de Hongrie*
 89. *Celital blanche*
 90. Navarre, Landes
 91. *Olivan*

3.
Plate-Bande.
- 92. *Grenache*
 - 93. Liverdun bon vin, Vosges
 - 94. Bourguignon noir, Seine-et-Marne
 - 95. Négron de Vaucluse
 - 96. Muscat noir, du Jura
 - 97. *Terret Mourreau noir*
 - 98. *Muscat rouge, Blanc panache*
 - 99. *Maroquin*
 - 100. Pulsare, Haute-Saone
 - 101. *Melarot*
 - 102. *Pique-poulle noir*
 - 103. *Aliade*
 - 104. *Terre de Barry noir*
 - 105. Bérardi, Vaucluse
 - 106. Liverdun bon vin, Vosges
 - 107. *Grenache*
 - 108. *Gale Blanc*
 - 109. *Moulon*
 - 110. Asctate-Saume, Pyrénées-orientales
 - 111. *Espagner*
 - 112. *Negrette*
 - 113.
 - 114.

FRUITS NOIRS RONDS.

(Black, round Grapes.)

4.
Plate-Bande.
- 115. Croc, Mayenne
 - 116. Blanc-Madame, Hautes-Pyrénées
 - 117. Dolceto, Pô
 - 118. Balzamina, Pô
 - 119. *Augiber blanc*
 - 120. *Negrun*
 - 121. Troussseau, Jura
 - 122. Espagnins, Bouches-du-Rhône
 - 123.
 - 124.
 - 125. *Terret, Vaucluse*
 - 126. *Grenache, Vaucluse*
 - 127.
 - 128. Sparse grosse, Vaucluse
 - 129. ———— menue, *idem*
 - 130. Jacobin, Vienne
 - 131. *Bourbon Longue, Vaucluse*

- 4.^e 132. *Quenoise*
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 134. Camarau rouge, Hautes-Pyrénées
 135. Pique-poule noire, Landes
 136.
 137. Aleatico, Pô
 138. Rive d'Alte, Lot
 139.
 140.
 141.
 142. *Caular, Vauchuse*
 143. Sanmoireau, Seine-et-Marne
 144. Mauzac noir, Lot
 145. *Picardin, Vauchuse*
 146. *Plant droit, Vauchuse*
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 157. Terret, Hérault
 158. Tinto, Ardèche
 159. *Torzia, Vauchuse*
 160. Grignoli, Pô
 161. Sirodino, *idem*
 162.
 163.
 164.
 165.
 166. Rothe Hintsche, Bas-Rhin
 167. François noir, Aube
 168. Pique-poule Sorbier, Dordogne
 169. *Pampigoet, Bernardy*
 170. *Spar, Bernardy*
 171. Brunfourca, Bouches-du-Rhône
 172. Gruselle, Drôme
 173. Claverie rouge, Landes
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 180. Pique-poule, Lot-et-Garonne
 181. Pique-poule noir, Dordogne
 182. Raisin noir, Drôme
 183. Baclan, Jura
 184.
 185. *Vacarise, Vacluse*
 186. Gamet noir, Haute-Saone
 187. Epicier grande espèce, Vienne
 188. Raisin Suisse de l'Aube
 189. Coda di volpe, Pô
 6.^e 190. Balavri, *idem*
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 197. *Ugni noir, Vacluse*
 198.
 199.
 200. Cortese nera, Pô
 201. *Berardy, Vacluse*
 202. *Verdan, Vacluse*
 203. Plant droit, Vacluse
 204. Meunier, Bas-Rhin
 205. *Clairrette rose, Bouches-du-Rhône*
 206.
 207. *Raisin panache, Thonelle, Bouches-du-Rhône*
 208. Lignage, Maine-et-Loire
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 210.
 211. Morillon noir, Bas-Rhin
 212. Gandie, Dordogne
 213. *Matinen, Bouches-du-Rhône*
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- 6.^o 219. Amarot, Landes
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 222. Epicier, petite espèce, Vienne
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 224. *Olivette noir, Bouches-du Rhône*
 225. Cornet, Drôme
 226. Courbu, Hautes-Pyrénées
 7.^o 227. *Corinthe sans Pepin, Bouches-du-Rhône*
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 230. *Aspirant, Bouches-du-Rhone*
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 233. Teinturier, Vienne
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 235. Morillon noir, Jura
 236. Arrouya, Hautes-Pyrénées
 237. Picardan gros, Vaucluse
 238.
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 240. Dégoutant, Charente
 241. Clairette de Die, de l'Hérault
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 244. Pineau noir, Côte-d'Or
 245. Maclon, Isère
 246.
 247.
 248. Saint-Jean rouge de l'Hérault
 249. *Raisin Turc, Bouches-du-Rhône*
 250. Canut noir, Lot
 251.
 252. *Muscat blanc, Bouches-du-Rhône*
 253. Pied de Perdrix noir, Hautes-Pyrénées
 254. Navarro, Dordogne
 255. Lardau, Drôme
 256.
 257. Berardi, grande espèce, Vaucluse
 258. Espar, Hérault
 259. Tripied, Alpes-maritimes
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 261. *Tibaurin, Bouches-du-Rhône*
 262. Gros-noir, Charente

- 7.^e 263. Morillon noir, Doubs
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 265. Grosse Serine, Isère
 266. Touzan, Lot-et-Garonne
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 269. Pique-poule noir, Vaucluse
 270. Pernan, Côte-d'Or
 271. Rochelle noire, Seine-et-Marne
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 273.
 274. Chasselas noir, Doubs
 275. Marseillais, Vaucluse
 276. Pineau franc, Haute-Saone
 277.
 278. Raisin rouge, Cantal
 279. Alicant, Lot
 280. Estrangé, Lot-et-Garonne
 281. *Clairette blanche*
 282. Merveillat, Vaucluse
 283. *Olivette Bouches-du-Rhône*
 284.
 285. Ugne, Vaucluse
 286. Parpeuri, Pô
 287. *Muscat Rouge, Bouches-du-Rhône*
 288.
 289. *Cornichon, Bouches-du-Rhône*
 290. Alexandrie noir, Doubs
 291. Muscat noir, Pô
 292.
 293. *Barbaroux, Bouches-du-Rhône*
 294. *Tres dur, Bouches-du-Rhône*
 295.
 296. *Pinnaut Blanc*
 297.
 298. *Cornichon Rouge*
 299. *Idem*
 300.
 301.
 302.
 303.
 304.

BLANCS, GRAINS OVALES.

(White, Oval-shaped Grapes.)

9.^e

- Plate-Bande. 305. Boutinoux, Drôme
 306. *Clairette blanche*
 307. *Pinnaut blanc*
 308. Vicane, Charente-Inférieure
 309.
 310. Picardin de l'Hérault
 311. Olivette, Bouches-du-Rhône
 312. Chalosse, Lot-et-Garonne
 313. Bouboulénque, Vaucluse
 314. Jacobin, Vienne
 315. Gamau, Drôme
 316. Muscatelle, Lot
 317. Grand blanc, Haute-Garonne
 318. Amadon, Charente-Inférieure
 319. Arbonne, Aube
 320. Weiss Klefeln du Haut Rhin
 321. Clairette de Limoux, de l'Hérault
 322. Aramond blanc, *idem*
 323.
 324. Folle blanche, Charente-Inférieure
 325. *Sales Blanc, Bernardy*
 326.
 327. Panse musquée, Bouches-du-Rhône
 328. Servinien de l'Yonne
 329. *Ealllade blanche, Bernardy*
 330. Pied said de la Mayenne
 331. Uliade de l'Hérault
 332. Qualitor, *idem*
 333. *Pinnaut (tres acide)*
 334.
 335. *Grec rouge, Bernardy*
 336. Raisin perlé, Jura
 337. Sauvignon blanc, Hautes-Pyrénées
 338.
 339. *Doncinelle, Lot*
 340. Rajoulen, Lot
 341. Bourret, Drôme
 342. Claverie mâle, Landes

10.	343.
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	345.
	346. Bourgelas, Vosges
	347.
	348. Plant Pascal, Bouches-du-Rhône
	349. Clairette de Vaucluse
	350. Plant de Salès, Bouches-du-Rhône
	351. Chenein, Vienne
	352.
	353.
	354. Plant vert de l'Yonne
	355. Pique-poule, Lot-et-Garonne
	356. Pans commune, Bouches-du-Rhône
	357.
	358.
	359.
	360.
	361.
	362. Muscat d'Alexandrie, de l'Hérault
	363. Cécane, de Haute-Garonne
	364. Grosse perle, de Seine-et-Marne
	365. Piquant-Paul, Basses-Alpes
	366. Verdat, Vaucluse
	367. Joannen, <i>idem</i>
	368. Olivette, <i>idem</i>
	369.
	370. Olivette ronde, Bernardy
	371. Caliter blanc, Bernardy
	372. Malvoisie, Pô
	373. Bon-blanc, Doubs
	374. Assadoule
	375.
	376. Malvasie, Pyrénées-Orientales
	377.
	378.
	379.
	380.

BLANCS, GRAINS ROUNDS.

(White, round Grapes.)

11.°

- Plate-Bande. 381. Joli blanc, Charente
 382. Raisin de crapaud, Lot
 383. Nebiolo commun, Pô
 384. *Paugnette, Bernardy*.
 385. Pique-poule, Landes
 386. Rougeasse, Lot
 387.
 388. Mélier blanc, Jura
 389. Rischling, Bas-Rhin
 390. *Doncinelle Bernardy*
 391. *Maulas, Bernardy*
 392. Lourdaut, Drôme
 393. Muscat blanc, Jura
 394.
 395.
 396. *Picardan blanc, Bernardy*
 397. Grosse variété blanche, Bas-Rhin
 398. Chasselas doré, Seine-et-Marne
 399. Chasselas, Jura
 400. Ciotat, Seine
 401.
 402.
 403.
 404.
 405. Saint-Rabier blanc, Charente
 406. Dammery blanc, Yonne
 407. Sauvignon blanc, Charente-Inférieure
 408. *Grand Benadu, Bernardy*
 409.
 410. Fié jaune, Vienne
 411. Fié vert, *idem*
 412. *Maroc, Bernardy*
 413. *Terret Bourret, Bernardy*
 414. Unie blanc, Bouches-du-Rhône
 415. Gouais petit, Jura
 416. Calcédé, Landes
 417.
 418. *Blanc Corinthe de grain, Bernardy*

- 12.^e
 Plate-Bande.
419. Arranjan petit, Landes
 420. Sauvignon, Jura
 421. Printannier, Hautes-Pyrénées
 422. Chasselas musqué, Seine-et-Marne
 423. Cascarolo blanc, Pô
 424. Melon blanc, Côte-d'Or
 425. Forte-queue, Deux-Sèvres
 426. Doucet, Lot-et-Garonne
 427. Mauzac blanc, Lot
 428. Herbasque, Alpes-Maritimes
 429. Hennant blanc, Seine-et-Marne
 430. *Calitor noir*, *Bernardy*
 431. *Eragnon noir*, *idem*
 432. *Muscat rouge*, *idem*
 433. Clairette de Limoux, l'Hérault
 434. Gros-blanc, Moselle
 435. Burger, Bas-Rhin
 436. *Maraquin*, *Bernardy*
 437. *Vergus*, *Bernardy*
 438. Saint-Pierre blanc, Charente
 439. *Petit Ribier*, *Bernardy*
 440. *Picardan*, *Bernardy*
 441. Marmot, Marne
 442. Rivesalte, Charente
 443. Claverie, Hautes-Pyrénées
 444. Arbois, Maine-et-Loire
 445. Chopine, Aisne
 446.
 447. *Colombon*, *Bernardy*
 448. Gouais jaune, Vienne
 449. Auvernat, Maine-et-Loire
 450. *Pique poule*, *Bernardy*
 451. Prunyéral, Lot.
 452. Servinien cendré de l'Yonne
 453. Pineau blanc, Côte-d'Or
 454. Gulard, Haute-Garonne
 455. Pique-poule, *idem*
 456. Ugne Lombarde, Vaucluse
 457. *Pique-poule noir*, *Bernardy*
- 13.^e
 Plate-Bande.
458. Rochelle blanche, Seine-et-Marne
 459. Saint-Jaume, Landes
 460. *Blavette*
 461. Courtanet, Lot-et-Garonne

- 13.^e 462.
 Plate-Blande. 463.
 464. Plant de Languedoc, Bouches-du-Rhône
 465.
 466.
 467. Muscat d'Espagne, Hérault
 468. Blanc doux, Landes
 469. Latrut, *idem*
 470. *Drouais, Bernardy*
 471. Raisin grec, Vaucluse
 472. Fourmenté, Aisne
 473. Merlé blanc, Landes
 474.
 475.
 476. Aligoté, Côte-d'Or
 477. Kniperlé, Bas-Rhin
 478. Guilandoux, Lot-et-Garonne
 479. Sauvignon du Jura
 480. Mansein blanc des Landes
 481. Semillon, Lot-et-Garonne
 482.
 483. Guillemot blanc des Landes
 484.
 485.
 486. *Olivette noir, Bernardy*
 487. *Muscat noir, Bernardy*
 488. *Chassela Crussant de grain*
 489. Raisin blanc, Pô
 490. Valentin blanc, Alpes-maritimes
 491. *Maroquin, Bernardy*
 492. Plant de Demoiselle, Bouches-du-Rhône
 493. *Martinen, Bernardy*
 14.^e 494. Raisin vert, Bas-Rhin
 Plate-Bande. 495. Bourguignon blanc, Haute-Marne
 496. Camarau blanc, Hautes-Pyrénées
 497.
 498. *Rousselle, Bernardy*
 499. *Ulliade, Bernardy*
 500.
 501.
 502. Clairette menue blanche, de Vaucluse
 503.
 504. *Bonne Vituegne, Bernardy*

- 14.^e 505. *Tokai, ou Pinneaut Gris*
 Plate-Bande. 506.
 507. *Raisin de poche, Bernardy*
 508.
 509.
 510.
 511. *Clairette, Bernardy*
 512.
 513.

RAISINS GRIS OU VIOLETS; GRAINS OVALES.

(Grey or violet-coloured Grapes; oval-shaped.)

514. Pique-poule gris, de l'Hérault
 515. Feldlinger, Bas-Rhin
 516. *Raisin Turc, Bernardy*
 517.
 518. Gentil brun, Bas-Rhin
 519. Blanquette violette, Pyrénées-Orientales
 520. *Mornin, c'est un chasselas, Bernardy*
 521.
 522.
 523. Damas violet, de l'Hérault
 524. *Aramon, Bernardy*
 525.
 526.
 527. *Muscat de Rome, Bernardy*
 528. *Chatus, Bernardy*
 529. *Malvoisie, Bernardy*
 530.
 531. *Raisin Cornichon, San Pepin*
 532.

GRAINS ROUNDS.

(Round Grapes.)

- 15.^e 533. Müller reben, Moselle
 Plate-Bande. 534. Muscat rouge, Loir-et-Cher
 535. Marvoisin, Loire
 536. Feldlinger, Bas-Rhin
 537. Braquet gris, Alpes-Maritimes
 538.
 539.

- 15.^e 540. Gromier violet, Cantal
Plate-Bande. 541. Muscat rouge, Seine-et-Marne
542. Chasselas violet, Pô
543.
544.
545. Grec rouge, Drôme
546. Pineau gris, Côte-d'Or
547. *Blanquette rose (ovale)*
548. *Muscat noir*
549.
550. *Tripion Gros, Raisin rond*
551. *Malvoisie violet*
552. *Caillaba noir Musqué*
553.
554.
555. *Muscat rose*
556.
557. *Elizabeth*
558. *Papan, ou Cornichon blanc*
559.
560. *Maroc noir*
561.
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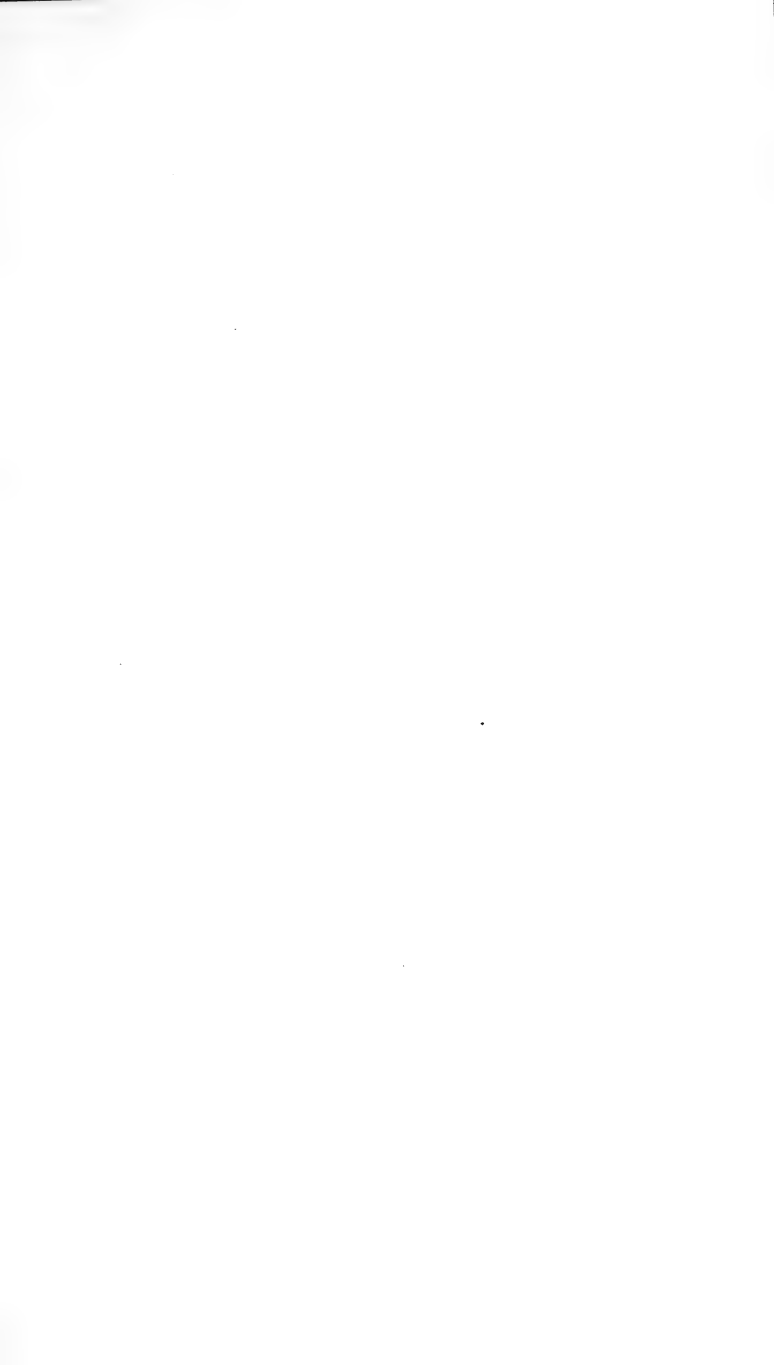
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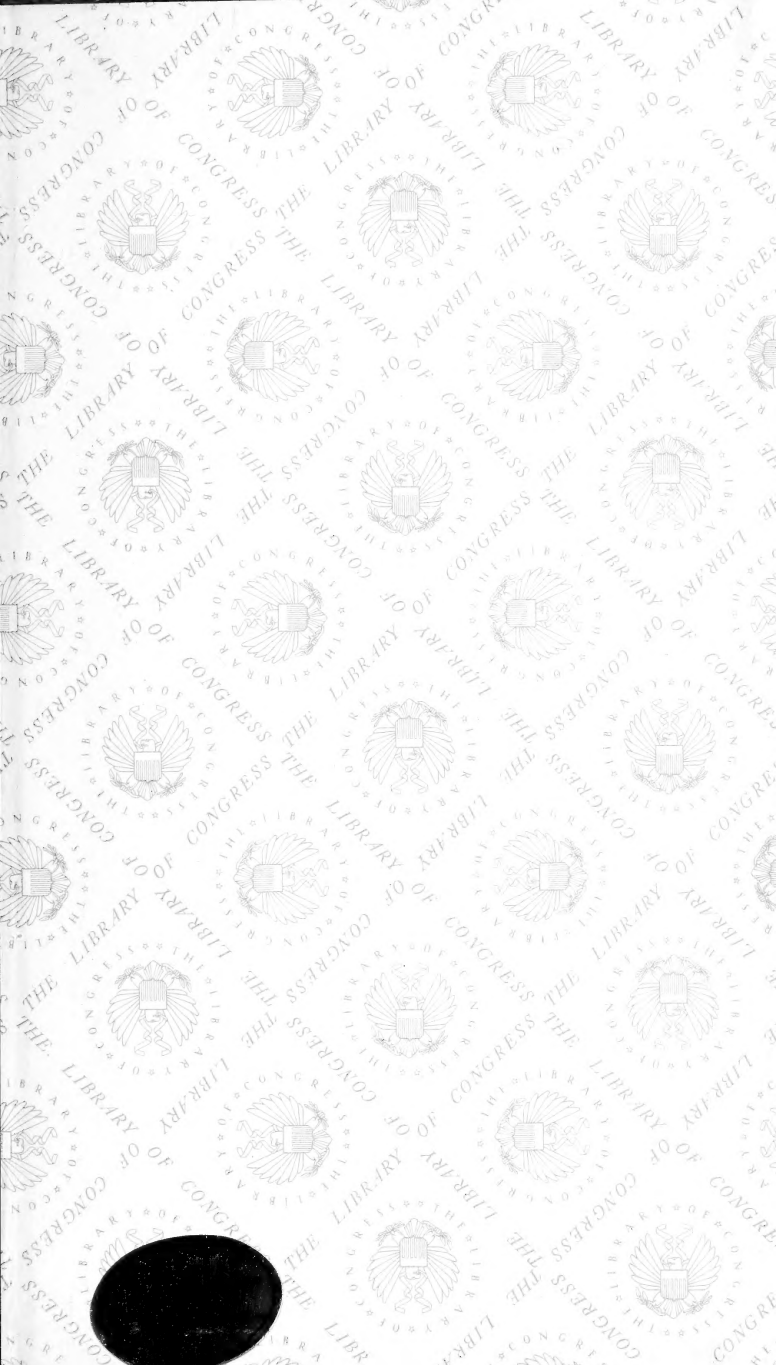


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